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Mitchell Banks Memorial Lecture

ON

THE SURGEON AS PATHOLOGIST.

DELIVERED BEFORE THE UNIVERSITY OF LIVERPOOL ON NOVEMBER 10TH, 1921,

BY

C. J. BOND., C.M.G., F.R.C.S.,

HONORARY CONSULTING SURGEON TO THE LEICESTER ROYAL INFIRMARY; HONORARY COLONEL A.M.S.; VICE-CHAIRMAN, MEDICAL CONSULTATIVE COUNCIL, MINISTRY OF HEALTH.

AFTER reading the addresses delivered by Sir Henry Morris in 1908 and by my lifelong friend and fellow-student the late Sir Victor Horsley in 1914, and after consulting other notices of the life and work of Sir William Banks, the outstanding impression left upon my mind is a sense of the thoroughness and the zeal with which Banks tackled any problem with which he was concerned, and of his dissatisfaction with all half-measures and makeshift procedures in surgical work.

Dissatisfied with the disappointing results which had followed the partial operations practised by surgeons prior to 1877, and influenced by the earlier writings of C. Moore of the Middlesex Hospital, Banks commenced to work out on sound lines his more radical procedure for the removal of cancer of the breast. Partly as the result of his early training in anatomical and histological methods under Goodsir at Edinburgh, Banks was enabled to bring about a great advance in surgical practice in this important field of mammary cancer because he was a pathologist as well as a surgeon. I venture to think that careful inquiry into the methods and principles which have underlain the work of all the great masters in surgery will show that the better results and the revolutions in surgical practice which they have brought about have been due to a deep grasp of physiological and pathological principles which other surgeons have failed to appreciate, rather than to mere mechanical dexterity, important as this may be.

But although we are deeply thankful for the brighter outlook brought about by the pioneer work of Banks and other surgeons in the surgical treatment of cancer of the breast, everyone will, I think, agree that there is still room for improvement in regard to the surgical treatment of malignant disease in all parts of the body. In Banks's words, we are still "dissatisfied with the ineffectiveness, as a curative remedy, of the surgical treatment of cancer." We shall not, I fear, get much further with the conquest of cancer in its various forms until we know more fully than at present the life-history of the cancer cell, the influences which start it on its irregular course of development, and the conditions which favour its multiplication and growth.

We must, in fact, be pathologists, or rather physiologists, as well as surgeons, if we are to take full advantage of the many opportunities which the practice of surgery provides of observing the earliest beginnings of disease in the human body.

It is because I feel strongly on this point that I propose on this occasion to ask your attention to some facts of physiological significance which have come to my notice in the course of surgical work during the war.

THE "RETURN IMMIGRATION" OF LEUCOCYTES IN RELATION TO DEFENCE AND INFECTION.

In the early days of the war the question of the action of strong antiseptics on the tissues and the desirability of using these reagents in the treatment of wounds, was a still unsolved problem. I happened at the time to be engaged in operating on recruits for the removal of hernia, varicose veins, and other disabilities which prevented them from joining Kitchener's army. In some few of these cases it was desirable to introduce a small wick of gauze, or other material, as a temporary drain, and advantage was taken of this to impregnate the wick drain with some sterilized and insoluble pigment, such as indigo, which would serve to indicate the activity of the phagocytosis in the wound and the fate of the leucocytes which had ingested the pigment particles.

Observations on Aseptic Closed Wounds.

The result of a number of observations carried out on wounds in the human subject and in animals served to show that a cotton thread or other fibre impregnated with sterilized indigo or some pigment insoluble in the body fluids is rapidly cleared of its pigment granules by the leucocytes which crowd into it from the walls of the wound, and that these again re-enter the blood stream or the tissues with their loads of pigment.

In these aseptic wounds no pus is formed, and the leucocytes which in an infected wound would be killed by the organisms or their toxins and thrown off as pus cells still remain living and active after ingesting the pigment particles, and carry these pigment loads back with them when they re-enter the blood or lymph stream or the intercellular tissue spaces in the walls of the wound or the blood clot in its cavity.

The only effect of a strong antiseptic—such as carbolic acid 1 in 20, or mercury bichloride 1 in 1,000—in such an aseptic wound is to kill, by chemical action, as the knife kills by mechanical injury, a few more tissue cells and leucocytes, and these either escape along the wick drain or are dealt with by the still living phagocytes on the walls of the wound. If, however, the chemical antiseptic used is too concentrated or its volume too great, then it may bring about a collection of devitalized cells and dead fluid which is too large for these living cells to deal with.

These findings in aseptic wounds in the human subject are confirmed by observations on experimental wounds in animals. Sterilized threads impregnated with indigo or carmine were inserted aseptically into the tissues of guinea-pigs. Sections of the testis at some distance from the site of an implanted indigo thread showed that the fibroblasts and the wandering phagocytes around the blood and lymph vessels, in the spaces between the seminiferous tubules, were crowded with indigo grains. In the muscular tissue of the thigh carmine-loaded leucocytes could be seen lying on or in the walls of capillaries at a distance of several millimetres from the pigmented thread.

Such observations, however, dealt only with closed tissues in which the blood and lymph circulation was in active operation, and it became desirable to ascertain to what extent this re-immigration of pigment-loaded phagocytes occurred from the surface of granulating wounds.

Observations on Open Granulating Wounds.

The presence during the war in our base hospitals of large numbers of stumps in which reamputation became necessary provided abundant opportunities for the study of this problem of the re-entry of leucocytes into the tissues of granulating wounds. An inch or more of the protruding shaft of the femur in such a stump, with its core of living marrow, ending in a cap of granulation tissue, was dressed with gauze impregnated with sterilized indigo. After reamputation some days later, examination of the marrow cells higher up the shaft of the reamputated bone showed the presence of pigment particles in the marrow cells and in the polymorph leucocytes.

In some cases the granulating surface of the stump was dressed with sterilized rice starch. Sections of such granulating tissue made at right angles to the surface and stained with iodine revealed the presence of starch grains in the wandering cells and in the connective tissue cells, both in the deeper layers of the granulation tissue and in the cicatricial fibrous tissue at its base.

The fact that the transported pigment was absent from the capillaries and lymph vessels and the tissue spaces, while it was present in all situations in cells from the surface of the wound to the deeper layers of tissues, strongly suggested that the wandering phagocytes were the chief agents in the transportation. But under these conditions it was still impossible to eliminate entirely the influence of the circulation, and a further attempt was made to reproduce wound conditions in excised portions of living tissues and in blood clots outside the body.

Observations on Blood Clots and Excised Tissues.

Blood was drawn direct from the finger into a sterilized tube, centrifuged, and allowed to clot. After shrinkage of the clot from the sides of the tube, pigment (generally powdered carbon) was mixed with the serum in which the clot was floating, and by gentle rotation was brought in contact with the whole surface of the clot. The tube was then incubated for several hours to give the leucocytes time to ingest the pigment grains and to re-enter the clot. The clot was then fixed and hardened, and

paraffin sections showed not only the layer of carbon on the surface but also the presence of carbon-loaded leucocytes in all situations, from the surface to the centre of the clot, especially in the fibrinous clear zone and in the area of the white cells brought down by the centrifuge.

Here, then, in the absence of any blood or lymph circulation, we find the leucocytes taking up the pigment grains which cover the surface of the clot and transporting them to the interior.

The same migratory movement of loaded phagocytes can be shown to take place from the surface to the interior when portions of granulation or other tissues are incubated with blood or blood serums to which pigment has been added. By altering the pigmented fluid in which the clot is immersed the conditions under which this "return immigration" takes place can be controlled and varied. Thus the clot or the piece of granulation tissue can be incubated either in native or in foreign pigmented serum, or in other artificial fluids.

From these, and many other observations of a like kind, we may take it as an established fact that pigment laden phagocytes do re-enter blood clots and excised tissues when incubated in contact with them under suitable conditions.

It is true that only comparatively few of the many leucocytes which emigrate from a drop of blood when coagulation takes place re-enter the coagulum. Some fall into the surrounding serum, some adhere to the sides of the vessel. The size of the pigment grains which form the load also influences the result; thus cells which contain minute particles of carbon penetrate the clot more freely and to a longer distance than cells which have ingested the relatively larger rice starch grains.

It seems clear, however, that in the living body, from centres where pigment and other foreign substances are deposited, and from the surfaces of wounds, a to-and-fro stream of cells constantly flows, by which phagocytes of the wandering class pass to the focus of deposit or outwards to the surface and, after feeding on the pigment or the organisms as the case may be, return (in so far as they escape destruction as pus cells) with their ingested loads to the blood or lymph stream or to the intercellular spaces.

The Significance of Return Immigration.

It will, of course, be recognized that a large part of this description of a to-and-fro stream of phagocytes passing outwards to the surface and inwards to the tissue spaces and the lymph stream is an old story. Metchnikoff, in his classical researches on infection and immunity, showed many years ago that such a migration of wandering phagocytes occurs under normal conditions both in vertebrates and in invertebrates, from the tissues to the body cavities, and back from the body cavities to the tissues and the circulation. In the mucous linings of the alimentary and respiratory canals Metchnikoff, Macullum, and others have shown that the white blood cells pass up between the epithelial cells to the surface of these mucous membranes and ingest fat or other food particles, and return thus loaded to the tissue spaces, or by way of the lacteals and the lymph stream to the lymph glands and the general circulation.

But this normal physiological "to-and-fro" migration which goes on in health is intimately related to the pathological processes by which pathogenic organisms invade the body in disease. Calmette, in his very important work, *L'infection bacillaire et la tuberculose chez l'homme et chez les animaux*, in the section on the mechanism of tuberculous infection, says:

> "Cases of tuberculosis arise by the lodgement of the tubercle bacillus on the abraded skin or on the mucous surface, when the organisms are englobed, but not digested, by leucocytes, which convey them by way of the lymph or blood stream to the neighbouring lymph glands, where the leucocytes are in their turn devoured by mononuclear endothelial cells. These again by fusion form the multinucleated giant cells, and thus bring about the first stage in the formation of a tuberculous nodule."

This surely is a restatement of the problem of the "return immigration" of leucocytes in a manner suited to the pathological problem of infection. According to Calmette, the most important agent concerned in the transportation of the tubercle bacillus from the invaded mucous surface of the throat or alimentary or respiratory canal is the wandering polymorph leucocyte. A very essential element in the picture is the capacity of these germ-laden phagocytes to traverse the healthy mucous membrane on their way to the lymph glands or the deeper tissues without injury to the membrane, and without leaving any damage in their train by which the site of invasion by the infecting organism can be subsequently located. Thus it comes about that the pharyngeal or intestinal mucous membranes which have been traversed by leucocytes loaded with the tubercle bacillus during childhood may remain healthy while the lymph glands to which the phagocytes have passed, and where they are arrested, become the seat of active disease.

Other observers, notably Still[1] and Cobbett,[2] hold that the pulmonary route is accountable for many cases of tuberculosis in childhood. Apparently the mediastinal bronchial glands are not often affected by extension of the infection from tuberculous cervical glands, while Cobbett's careful observations on a series of unselected hospital cases in children seem to show that the bronchial glands are affected more commonly than the cervical or the mesenteric.

But whatever may be the real facts as regards the relative frequency of invasion by the pulmonary, the pharyngeal, or the intestinal route, the *method* of invasion, the means by which the tubercle bacillus reaches the lymph stream and the lymph glands would seem to be much the same in all cases. In this process transportation of the bacillus by wandering phagocytes appears to play an important part.

Calmette thinks that the tubercle bacilli ingested by the leucocytes escape intracellular digestion because they are protected by a capsule or envelope of lipoid material. The effect of the toxin liberated by the imprisoned bacillus is to bring about the death of the leucocytes which are aggregated together in the tuberculous nodule, and the setting free of the contained and still active organisms. The nasal mucous membrane is rarely affected, because the phagocytosed tubercle bacilli are caught in the mucus which bathes the nasal passages, and are swept away by ciliary action and the respiratory air currents.

The importance of the part played by mucus in the defensive mechanism of the body has not, I think, been sufficiently appreciated. In a post-graduate lecture[3] on the mucous channels and the blood stream as alternative routes of infection, delivered in London in 1913, I recorded some observations which seemed to show that different samples of mucus might vary greatly in suitability as culture media for bacilli of the coliform type. It would seem, indeed, probable that mucus may play a biochemical as well as a mechanical part in the protection of mucous membranes against infection by pathogenic organisms.

Such, then, are the facts concerning this to-and-fro migration of phagocytes in relation to the invasion of mucous surfaces by organisms such as the tubercle bacillus.

It is, however, upon the occurrence of "return immigration" in wounds and from granulating surfaces that recent observations, especially during the war, have shed an interesting light. Since under suitable conditions phagocytes ingest large numbers of organisms from the surfaces and in the walls of wounds, we are in a position, if we substitute the germ-laden for the indigo-laden leucocyte, to appreciate what goes on in a fairly healthy wound, and the opportunities that arise there, not only for the conveyance of organisms killed and digested by the phagocytes, but also for the transportation of organisms, which though ingested are *not* killed, and which, when the general resistance is lowered, may become liberated and start a fresh focus of infection or a "recrudescence of the local sepsis."

Latent Infection and Recrudescent Sepsis.

As I have already pointed out when speaking of Calmette's work, latent infection forms a very important feature in tuberculous disease. The tubercle bacilli become incarcerated in the polymorph leucocyte or in the endothelial or the giant cell. Surrounded but not killed, they may be permanently isolated by a barrier of fibrous tissue, or they may remain in a condition of suspended activity, ready, years later, when the vitality of the host has been lowered from any cause, to break out into renewed growth.

The same is true of the malaria parasite, the typhoid bacillus, and other organisms. It has long been known

that some injury to the spleen may determine the onset of a typical attack of malaria in a patient who has been free from symptoms of that disease for some years. I have recently seen a patient who had been in good health since recovery from an attack of typhoid fever some months before, in whom the typhoid bacillus was recovered in pure culture from a subperiosteal abscess over the tibia.

The development of syphilitic disease of the nervous system years after the initial infection by the spirochaete is another case in point. Examples might be multiplied. There is no doubt that organisms of many kinds which have gained access to the body do dig themselves in and become incarcerated in tissues and in situations outside the reach of the blood stream.

We do not yet know what the local and the general conditions are which favour this occurrence, or what happens to the organisms during the period of imprisonment, which may be spread over many years. It would seem, however, that latent infection may occur in most diseases of microbic origin, and that the process of finally ridding the body of any kind of organism which has once gained access to the tissues is more difficult and more intermittent than we have supposed. The experience of the war has shown, at any rate, the frequency with which invading organisms, both anaerobic and aerobic, may remain quiescent in the tissues around wounds and may break out into renewed activity under favourable conditions.

When in the early days I ventured to draw attention to the tendency of previously infected but healed war wounds to light up under the stimulus of a slight injury or surgical operation,[4] many surgeons of experience were reluctant to admit "latent infection" as a cause, and were inclined to attribute the recrudescence of the sepsis to a fresh infection. The fact, however, that these violent reactions frequently occurred after a slight injury or after surgical interference which did not involve a fresh wound proved too strong, and the occurrence of recrudescent sepsis in healed or healing wounds became recognized as a very important factor in the treatment of war wounds.

Latent infection and recrudescent sepsis were, in fact, the great features which distinguished wound treatment at the base hospitals from wound treatment at casualty clearing stations and front-line posts. They added enormously to the anxieties and seriously limited the opportunities for medical officers working in base hospitals both at home and abroad.

What, then, has this question of the "return immigration" of leucocytes which we are now considering to do with latent infection and recrudescent sepsis?

The work of Peyton Rous, F. S. Jones, and other observers has shown[5] that organisms (pneumococci, for instance) may be ingested by phagocytes and conveyed to the blood stream, and so reach the liver, spleen, and other organs, where they are destroyed. Mere *ingestion*, however, by leucocytes, without subsequent intracellular *digestion*, is not enough to ensure the death of such organisms. The internment within the cell may, in fact, actually protect the organisms against the lethal effect of the antibodies circulating in the blood.

Knowing, then, that organisms are ingested in large quantities by phagocytes in wounds; knowing, also, from observations on the feeding of leucocytes with pigment grains, that such loaded phagocytes *do* return from the surfaces and walls of wounds to the deeper tissues, we can form some picture of what takes place in the scar tissue which ultimately replaces the granulation tissue in previously infected wounds.

"Latent infection" is essentially a question of the incarceration of organisms in cells or among cells. The factors which set free the imprisoned organisms and bring about the recrudescent infection are such influences as interfere with the vitality of, or disturb the arrangement of, the cells which form the enclosing barrier.

These may be mechanical such as trauma, or chemical as by the injection of antiseptics and irritants, or thermal as by the application of extreme heat or cold. There is also reason to believe that they may be of a more general character, such as all conditions which depress the health and vitality of the body as a whole.

Whatever may be the importance of "return immigration" of phagocytes as a factor in the causation of "latent infection," it is certainly true that the interned organisms are located in the scar or barrier tissue which takes the place of the granulation tissue in infected wounds when healing occurs.

Surgeons of experience know that such operations as involve the opening up of scar tissue and the fibrous envelopes which surround foreign bodies and pieces of necrotic bone are more liable to be followed by a "flare up" in the wound than incisions through healthy tissues at a distance.

This suggests that it is not the organisms that find their way into the blood stream that produce the result, unless, indeed, these are in great numbers, sufficient to constitute a massive infection. It is the organisms which lie embedded in or amongst the leucocytes and the fibroblasts in the neighbourhood of the wound or foreign body which are so liable to take on renewed activity in tissues which were at one time granulation tissue and the site of cellular migration and proliferation. This fact is significant when considering the problem of return immigration of phagocytes and the transportation of organisms from the walls of wounds to the deeper tissues.

The Iodophil Reaction:

In Leucocytes and in Epithelial and Cancer Cells.

Passing now from this problem of the return immigration of leucocytes and its bearing on latent infection and recrudescent sepsis, I propose to say a few words on another problem of cell activity—one which, in its relation to the life-history of the epithelial cancer cell, has a direct bearing on the pioneer work of Banks in the treatment of breast cancer.

In a paper on the presence of an iodophil substance in the white blood corpuscles in health and in some other cells, and on the relation of this substance to phagocytosis and immunity,[6] I described a colour reaction with iodine which occurs under certain conditions in leucocytes and certain epithelial and cancer cells. I did not at that time identify this substance, which has such a strong affinity for iodine, with glycogen, because I did not wish to prejudge the question of its chemical composition. It has, of course, long been known that the polymorph leucocytes give a mahogany colour with iodine similar to that given by glycogen, and most observers (Gulland and others) have regarded this reaction as an indication of degeneration of the cell.

There are, however, facts which point in an opposite direction. Thus, if one or two drops of blood be drawn direct from the finger into a closed paraffin or plasticine cell and incubated for one hour, on washing away the clot and the red cells with a gentle stream of normal saline a film of living leucocytes is left adherent to the slide. If this is treated with a 1 per cent. solution of iodine in normal saline, and examined immediately with a high power, a number of the polymorphs will show just within the cell or still attached to its outer edge globules of a mauve-coloured substance which has exuded from the cell. In some cases these little beads become detached from the leucocyte and float away in the surrounding medium like drops of coloured oil, which soon dissolve and disappear. Even in the case of freshly emigrated living cells the mauve colour is distinct from the brown port-wine or mahogany colour shown by glycogen in cells like muscle cells.

Not only do living white blood cells of the polmorph type give this mauve reaction with iodine, it is shown also by living pus cells—that is to say, by leucocytes from an abscess cavity or a serous cavity, or from a granulating wound, which are still active and have not been killed by the virulence of the infection. In these emigrating or living pus cells the exuded iodophil substance gives a richer stain with iodine which may be brown or port-wine in colour, like that given by glycogen. In such cells the iodophil substance is less soluble and does not so readily exude from the cell into the surrounding medium.

There are certain facts which suggest that the presence of lime salts in some form favours the elaboration of this substance just as lime salts are essential for the formation of the blood clot.

The presence of the iodophil substance also affords a valuable indicator of the vitality and activity of the leucocyte. Thus, in a sample of pus from a pneumococcal empyema before drainage, the great majority of the cells gave only the yellow stain with iodine characteristic of

dead cells, while in the discharge from the pleural cavity of the same patient four days later, after incision and drainage, most of the cells showed this iodophil reaction.

Leucocytes from a well-drained wound or healthy granulating surface, or from a mucous membrane which is recovering from infection, give a well-marked reaction, while the pus cells from an unopened abscess or from a foul wound, or from the urethra in acute gonorrhoea, only give the yellow stain. If a dried smear of the urethral pus from a case of acute gonorrhoea be treated with the vapour of iodine and then mounted in iodine gum the picture will vary according to the virulence of the infection and the damage done by the gonococcus and its toxins to the leucocytes and the epithelial cells. In the acute stage both leucocytes and epithelial cells will appear as dead cells, stained a pale yellow with iodine. In the subacute stage the proportion of leucocytes and epithelial cells which give the mauve colour or port-wine colour will increase. In the recovery stage, when the discharge becomes less purulent and more mucoid in character, most of the leucocytes and many of the younger epithelial cells will show this iodophil reaction.

The ingestive capacity of the phagocytes for pigment varies also in the same way. Smears were taken from the urethral discharge of a patient in the subacute stage at hourly intervals after a preliminary injection into the anterior urethra of a suspension of sterilized indigo in normal saline. The first smears showed the indigo grains floating free in the muco-pus. Later smears, from the first hour to four hours after injection, showed a considerable number of leucocytes crowded with indigo grains and some also containing gonococci; on staining these films with iodine vapour many pus cells also gave the iodophil reaction. The cells which contain the iodophil substance do not as a rule ingest the pigment particles, and conversely the cells which are loaded with pigment grains do not give the iodine reaction. The same seems also to hold good of the cells which contain gonococci.

The absence of the iodophil substance in leucocytes which are actively phagocytic may be due to the fact that cells so engaged do not elaborate this substance, or it may be due to the escape of the substance into the surrounding medium at the time of ingestion of the pigment or organisms.

In the paper referred to I spoke of a possible association between the elaboration of this substance by the leucocytes and the defence against infection. It seemed as if the reaction might be a kind of defensive mechanism at long range, by which antibodies or opsonins were discharged into the medium surrounding the cell.

The amount of this glycogenic substance which is exuded from pus cells may be quite considerable. Thus in a case of acute gonorrhoea a drop of the urethral muco-pus mounted in iodine gum showed in a few days large numbers of droplets of this mauve-coloured substance floating free in the gum medium. These spherical globules often have a characteristic notched appearance suggesting crystallization, and they turn brown with age in the presence of iodine. So far I have not been able to detect any collection of this substance in the cytoplasm surrounding ingested foreign bodies or organisms, and there is at present no clear evidence that it takes any part in intracellular digestion.

It has long been known that tuberculous deposits in lymph glands and in other situations are rich in iodine. If, as we now find, the leucocytes massed in such areas are elaborating a substance with a strong affinity for iodine, this may explain the high iodine content of the tissues in such foci. In a number of dry smears, stained with iodine vapour, taken from degenerating and extending tuberculous deposits, iodophil substance has been noticed in the form of mauve-coloured extracellular droplets.

In Epithelial Cells.

Reference was made in the paper mentioned to the occurrence of this iodophil reaction in certain cancers of epithelial origin. Later investigation has shown that this tendency to elaborate a substance giving a mauve or port-wine colour with iodine is characteristic of many normal epithelial cells which line the mucous cavities of the body. If, for instance, a cotton-wool swab, moistened with normal saline, be gently rubbed over the mucous surface of the tongue or tonsil or conjunctiva, or the rectum just within the anus, the epithelial cells adhering to the swab can be transferred to a drop of 1 per cent. iodine solution on a slide and examined as a wet preparation, or the dry smear can be treated with iodine vapour and examined with an oil immersion lens. Many of the living younger cells will show the mauve or port-wine colour in varying degrees of intensity, while the dead and desquamating cells will show the ordinary iodine yellow stain. The healthy urethral mucous membrane is normally coated with large numbers of these iodophil cells. They can be readily obtained by introducing a sterile and moistened swab just within the meatus.

Imbedded paraffin sections of portions of mucous membrane from various situations, fixed while living in absolute alcohol, show that these iodophil epithelial cells have a definite distribution in the mucous membranes, and also that they are arranged in a stratified manner in the membrane at any one situation. The iodophil cells in the mucous membrane of the lip and tongue are arranged in horizontal lines in the Malpighian and upper layers, and in columns between the papillae. In normal conditions an orderly succession of these waves of mauve-coloured or red-brown cells passes from below upwards parallel to the surface of the membrane.

So far I have only found these cells in the mucous membranes which line the inlets and outlets to the body. They are present in the mouth, throat, nasal passages and conjunctiva, the genito-urinary canal, urethra, bladder, vagina, uterus, and the rectum. In the bladder the cells have been obtained from an inflamed mucous membrane in a case of bilharziosis. They have not been obtained from the stomach, intestine, or gall bladder. This does not necessarily mean that the epithelial cells in these situations do not elaborate any glycogen-like substance. There is some evidence that the composition of the substance may vary in different cells, being more soluble and more easily exuded and therefore lost in some situations than in others.

In Cancer Cells.

The part played by these iodophil cells in cancer of epithelial origin is a problem of considerable importance.

In a series of sections from a case of epithelioma of the lip, frozen and cut immediately after removal, and after hardening in absolute alcohol and imbedding in paraffin, the following condition was found:

> The mucous membrane at some distance from the growth showed a normal arrangement of the epithelial covering, with a normal stratification and arrangement of the iodophil cells. Nearer to the cancerous area, as the thickness and growth of the epithelial layer became more irregular, the iodophil cells become fewer in number; they no longer lay in successive layers from the summit of the papillae to the surface, but were collected in irregular groups, and in some places were found in detached little cell nests wholly composed of mauve or red-brown cells. In the cancer area itself the whorls of flattened cells which form the typical cell nests are themselves composed of these iodophil cells, and stand out as red-brown islands amongst the rest of the yellow-stained epithelial cells.

The iodine, by picking out these iodophil cells, differentiates these from the rest of the epithelial cells, and thus gives a differential staining reaction in epithelioma.

What is the meaning of this fact that the cell nests are formed of iodophil cells? In view of the irregular growth of the epithelial cells in cancer, upwards to the surface and downwards in the underlying tissues, it is likely that the iodophil cells would also show some irregularity of growth and distribution. It may be that the departure from normal growth characteristic of cancer may primarily affect the iodophil cells.

This irregular distribution of the iodophil cells may be merely an accidental accompaniment of the irregular cell growth and increased cell division in the epithelial layer, or it may have a deeper significance and indicate a struggle for existence among the epithelial cells themselves in cancer, during which the iodophil cells get walled up and interned by the rest of the epithelial cells.

Smears taken from fresh sections of the lymph glands draining the cancerous area throw some light on this problem. The infected cervical glands in epithelioma of the lip show islands of cancer cells giving all shades of colour with iodine, from a pale mauve through red to brown, and in some cases a blue-black.

The epithelial cells which find their way into the lymph glands in epithelioma of the lip and grow in these

situations and form the secondary deposits are largely iodophil cells. But this does not necessarily mean that the iodophil cells are more abnormal, more cancer-like, than the rest of the epithelial cells. In view of the fact that iodophil epithelial cells are normally found in healthy mucous membranes, it may mean that these cells have retained some part of their original function of elaborating this iodophil substance, even when growing in the lymph gland. And this brings us to the subject of cell heredity in cancer.

In Sarcoma.

So far these iodophil cells have only been seen in the myeloid form of sarcoma.

Dry smears taken from the freshly cut surface of a myeloma from the lower end of the femur in a young man of 23 showed numerous cells which gave the mauve or port-wine colour reaction with iodine. The reaction was confined to the large singly and multinucleated myeloid cells and was not present in the spindle cells comprising the ground tissue of the growth.

Films from the red marrow of the lower epiphysis of the femur in the same patient also gave the same colour reaction with iodine. This is interesting in view of the similar ancestry of these cells.

The normal cells of the red marrow and the abnormal cells of the myeloma arise from the same group of mother cells as those from which the polymorph leucocytes originate. All these are capable of elaborating this iodophil substance, and leucocytes and myelocytes are also able to ingest foreign particles. This latter capacity has not yet, apparently, been noticed in abnormal myeloma cells.

The presence of an iodophil substance in myeloma cells affords another instance of the retention of some portion of original function by malignant tumour cells. Further investigation along the lines of cell heredity in cancer will probably throw fresh light on the obscure problem of the stage in the life of the cancer cell at which abnormal growth and reproductive activity first make their appearance.

So far, both in sarcoma, or cancer of mesoderm origin, and in epithelioma, or cancer of ectoderm origin, iodophil cells have only been found in the primary tumours or the secondary growths which arise in situations and in mucous membranes which normally contain such iodophil cells. This is true of the secondary deposits which arise in serous membranes like the peritoneum, provided the primary growth also arises in an iodophil cell area.

The Nature of the Iodophil Substance and its Relation to Glycogen.

In the paper previously mentioned I discussed the question of the identity of this iodophil substance with glycogen. One or two further facts must now be mentioned bearing on this point.

The normal polymorph leucocyte while circulating in the blood stream, if fixed and examined immediately, does not as a rule give the reaction. As soon, however, as it leaves the blood stream, whether it be to emigrate from the incubated blood clot or to enter the leucocyte trap in the aseptic wound, or to permeate the wall of an abscess as a pus cell, then it tends to give a colour reaction with iodine which varies from mauve to a red-brown, according to age and other conditions.

The difference in colour seems to depend on the solubility of the iodophil substance and the ease with which it exudes from the cell. In epithelial cells the substance exudes very little, and such cells often give a red-brown or port-wine colour with iodine. The addition of a diastatic ferment such as ptyalin does away with the colour reaction.

On these and other grounds there can be little doubt that this substance in leucocytes, marrow cells, certain epithelial cells, and some cancer cells which give a mauve or port-wine colour with iodine is either glycogen, or some substance closely allied to glycogen. The fact that epithelial cells containing glycogen line the cavity of the mouth, constantly bathed with the saliva, provides another example of the capacity of cells to live and grow and elaborate secretions in a destructive medium so long as they retain organic connexions with the underlying tissues and the lymph and blood streams.

The Association between the Iodophil Substance and Capacity to Resist Infection.

In the paper referred to I gave some instances which showed that there is some association between infection and the amount of the iodophil substance formed by the white blood cells. We have now seen that the pus cells which flow from a well-drained abscess also give this marked colour reaction with iodine. The same is true of epithelial cells. The reappearance of iodophil epithelial cells in the urethral discharge during recovery from an attack of gonococcal urethritis has been alluded to. The iodophil substance does not seem to play any important part in intracellular digestion. There is other evidence that the power to elaborate this substance is independent of the capacity of the cell to ingest foreign substances. Thus, while the leucocytes which emigrate on to the slide from the incubated blood clot give the reaction, the leucocytes which adhere to the slide when defibrinated blood is incubated do not give it, although they preserve unimpaired their capacity to ingest foreign substances and their capacity for amoeboid movement.

Further inquiry is necessary to determine whether the presence of this glycogen substance in cells is merely an expression of vigour and active cell development, or to what extent it must be regarded as a secretion which, in the case of the leucocyte, is shed into the surrounding medium, and in the epithelial cell also may have some relation to immunity against infection.

Flexner[7] has shown that the nasopharyngeal mucous membrane varies markedly in individual monkeys in its capacity to resist infection by the organism of poliomyelitis. It would be interesting to know whether the distribution of the iodophil epithelial cells show any corresponding difference of distribution in these animals.

Conclusions.

The following are the main conclusions that seem to follow from these observations:

1. That a capacity to elaborate a substance or substances closely allied to, if not identical with, glycogen is possessed by leucocytes, myelocytes, and certain epithelial cells.
2. In the case of the white blood cells this capacity is in the main limited to the polymorph leucocytes when they emigrate or escape from the blood stream.
3. In the emigrated leucocyte this glycogenic substance takes the form of a colloid liquid which is rapidly exuded from the cell, and gives a delicate mauve colour with iodine.
4. In the myeloid cells of the red marrow and in some myeloma cells this substance is also present and is somewhat evanescent.
5. In certain epithelial cells of the mucous membranes which line the orifices of the digestive, respiratory, and genito-urinary canals, this iodophil substance is present in a more granular and less soluble form. It is more closely incorporated with the cell cytoplasm, and stains a red or red-brown colour with iodine.
6. The same or an allied substance is also constantly found in certain cancer cells of epithelial origin.
7. In the primary growth it is present in the cells which form the cell nests. In common with the irregular growth of the epithelial cells in the cancer area the disposition of the iodophil epithelial cells also undergoes a change. These are reduced in number, and are collected in irregular groups rather than in stratified layers.
8. This iodophil substance is also present in the epithelial cancer cells found in the lymph glands and in other secondary deposits.
9. The presence of this capacity for elaborating iodophil substances by cancer cells in secondary deposits is an indication of the retention of some degree of original function by these cells in their abnormal situation, and is associated with important problems of cell heredity.
10. Myeloma cells have a genetic relation with red marrow cells on the one hand, and polymorph leucocytes on the other. All these cells elaborate an iodophilic substance in a characteristically staining and soluble form.
11. The high glycogen content in mammary tumours of certain strains in mice[8] seems to be connected with the strain—that is, the hereditary origin—rather than with a high degree of malignancy in the cells of such cancers.

12. The proportion of iodophil cells in the epithelial covering of the endometrium varies greatly, both in different individuals and in different areas of the same uterus. This may probably be connected with the periodical changes in cell metabolism which occur in this organ. A systematic examination of the glycogen content of the uterus in different species of mammals, and in different phases of activity of the organ, would probably throw light on the metabolic changes in epithelial cells.

13. There are some facts which suggest an association between activity in glycogen formation and resistance to infection. In leucocytes the iodophil substance seems to be exuded into the surrounding medium on the disintegration of the cell.

In epithelial cells the iodophil substance is present in a less soluble form, and remains in closer association with the cytoplasm of the cell. The fact that the distribution of the iodophil cells varies both in the mucous membranes of different individuals and in different areas of the same mucous membrane may be associated with a varying power to resist invasion by pathogenic organisms.

In concluding, I fear imperfectly, the task allotted to me, I wish to thank you, Mr. Vice-Chancellor, and the Senate and Council of the University, for the honour they have conferred on me in inviting me to deliver the Mitchell Banks Memorial Lecture.

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TREATMENT BY INFLATION WITH OXYGEN OF TUBERCULOUS AFFECTIONS

OF THE ENCLOSED CAVITIES, ABSCESSES, CARIES, SYNOVITIS, AND FIBROUS ANKYLOSIS.

BY

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SINCE my first report in the *Indian Medical Gazette* of September 9th, 1920, under the title of "Preliminary note on the treatment of tuberculous affections of the enclosed cavities, abscesses, and caries, by inflation with oxygen," the treatment has been further extended in its applications, with very remarkable results, warranting a more extensive trial.

The treatment was originally applied to eight cases of tuberculous affections, four cases of psoas abscess, one of tuberculous peritonitis, and three of tuberculous joints. Since then the treatment has been applied to six cases of psoas abscess, three cases of tuberculous peritonitis, seven cases of tuberculous joints, one case of infection of compound fracture by *B. aerogenes capsulatus*, two cases of multiple pyaemic abscesses, three cases of chronic synovitis of the knee-joint, and two cases of fibrous ankylosis of the knee-joint.

A Potain's aspirator is fitted with a stopcock, needle and branch tube, or better with a two-way stopcock, one tube leading to the aspirator and the other to the oxygen inflation apparatus. The latter consists of an oxygen cylinder with pressure tubing leading to a wash-bottle containing hydrogen peroxide and a blow-off safety valve, so that the gas is made to bubble through the hydrogen peroxide and is led off by pressure tubing to a glass tube containing cotton-wool; this is suspended in water at a temperature of 100° F., and its exit leads, by a further length of pressure tubing, to the aspirating needle. The whole arrangement, from the wash-bottle attachment of tubing, including the aspirating needle and aspiration attachments, is sterilized together.

After aspirating the fluid from the cavity to be inflated (whether it is pus from an abscess or joint, or clear or turbid fluid from the peritoneal cavity or a joint) the stopcock is turned, shutting off the aspiration and connecting with the inflation portion of the apparatus. The oxygen cylinder is turned on: the apparatus has previously been tested to see how easily it can be accomplished and to test the blow-off of the wash-bottle and the rubber pressure tubing joints, the amount of the pressure of the gas required for the case being adjusted on the safety valve. The gas, in passing through the wash-bottle, is freed from any particles and is rendered nascent, and its rate of flow can be seen. In the passage of the gas through the cotton-wool tube it is warmed and rendered sterile. As soon as the cavity has been inflated to the desired extent the stopcock is turned off and the cock of the oxygen cylinder closed. The surgeon then applies a purse-string suture around the entrance of the needle or cannula in the skin, and pulls the suture tight while withdrawing the needle or cannula, whichever is used.

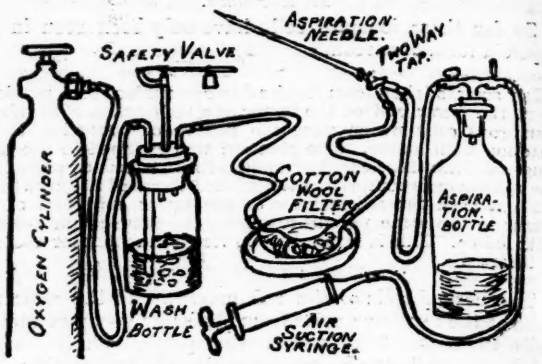

Diagram of apparatus for treatment by inflation with oxygen.

This process may be modified in dealing with certain types of cases, as, for example, when it is desirable first to flush out a cavity with a saline solution, a solution of sodium bicarbonate or weak tincture of iodine. In such cases it is desirable to use an entrant and an exit cannula and to apply the purse-string sutures around each first, and the exit cannula should have a slightly larger calibre than the entrant cannula. The flushing may be done through the same cannula as the inflation apparatus cannula, the aspiration tube being dispensed with and the flushing tube taking its place. When the flushing is completed the flushing tube is detached, and when the fluid has been expressed from the cavity through the exit tube the latter may be removed and the purse-string suture tied; the inflation may then proceed.

The following are the details of the twenty-four cases on which this treatment has been applied.

Tuberculous Peritonitis.

Laparotomy had previously been performed on these cases and the diagnosis was evident. It is advisable to perform laparotomy in every new case in order to ascertain the condition of the peritoneum and gut; a small incision is sufficient for this purpose. If the disease has advanced to the stage of adhesion of the gut to the abdominal wall and of the folds to one another, then it is always necessary to make a small incision and to use a rubber tube in place of the cannula or needle; the tube may be of considerable length, and this is advisable if the fluid is turbid or if it is desirable to run in saline for the purpose of removing the fluid. Very gentle handling is necessary owing to the great ease with which the gut may be injured, particularly in advanced stages of this disease. Where, however, the disease is in its early stage, and where there is plenty of fluid in the peritoneal cavity, then a trocar or needle of Potain's aspiration set may be used without making an incision.

CASE I.

A Burmese trader, aged 33, confined to his bed for three months, was suffering considerable pain in the lower portion of the abdomen, particularly on the right side, where large hard masses could easily be felt; the abdomen was distended with fluid and the man emaciated.

Laparotomy was performed and the peritoneal cavity well irrigated with saline, masses of enlarged glands and caseating tuberculous material were found, and many loops of the intestines were adherent. He had been operated on before the oxygen method of treatment had been devised; the inflation method was applied fourteen days after the laparotomy operation by making a small incision in the right iliac region, and opening the peritoneal cavity sufficiently to ensure that there was no adhesion of the intestine to the abdominal wall.

A Potain's aspirator was introduced with the finger towards the caecum and a suture inserted along the peritoneal opening so as to enclose the trocar, two ends being left through the

wound so that they could be pulled tight on removing the trocar. The abdominal wall was closed in the usual way, with the exception of the peritoneal suture round the trocar, and, finally, a purse-string suture was inserted around the trocar in the skin and left to be tied tight on completion of the inflation.

The abdomen was then inflated, the anaesthetic being stopped before the inflation was commenced. The gas was allowed to enter very slowly and the diaphragm carefully watched, the respiration was not interfered with and a considerable tympanitic note was obtained, the abdominal cavity being blown out like a drum. Two hours later he said that he had no discomfort whatever and that he felt greatly relieved. The tympanitic note subsided in three days, and the temperature, which had been hectic, became normal.

A fortnight after this his condition had very greatly improved, many of the masses that had been easily felt through the abdominal wall could not be found. He had put on weight and was attending to his business at his home. He came into hospital again for another inflation, which was done on the left side with a similar result. A month later he had improved so much that I could hardly recognize him. He had two more inflations in his house after this and his improvement continued. Although his house was only a bamboo hut, we had no difficulty in applying the method, as it is quite suitable to private practice.

CASE II.

A Mohammedan boy, aged 18, had suffered for several years; the abdomen was distended, and the temperature very variable. Laparotomy disclosed matting of the intestines and particularly large masses in the neighbourhood of the caecum. Inflation was performed by the open method; the abdomen was flushed out with saline on account of thick masses of inflammatory lymph. An india-rubber tube was inserted through a small incision in the right iliac fossa and a purse-string suture applied as in the former case. Three hours afterwards the abdomen was highly tympanitic, but the lad said he felt quite comfortable. The tympanitic note remained for five days, but the temperature continued to be normal and he complained of no pain or discomfort.

On the twenty-first day the process was repeated, the open method being again adopted, and the intestines were found to be no longer adherent and the ascitic fluid was clear. At the end of the eighth week the direct method of inflation was adopted and was repeated again twice at a month's interval, after which the lad said that he felt perfectly well and had no complaint to make. The abdomen was tumid and no masses could be made out; there was no distension, no pain, and no tenderness; the lad ran about and appeared to be quite well.

CASE III.

A Burmese woman, aged 22, an early case where there was no matting of the intestines, was given two injections of oxygen, the first by the open method, no irrigation being resorted to, and the second by the direct method, after an interval of three weeks. All the symptoms disappeared, and I heard three months later that she was feeling well and had nothing to complain of.

It would appear that gas has the property of separating surfaces which are adherent by plastic lymph in chronically inflamed conditions of the peritoneum, and that this is brought about by the ability of gas to reach areas where fluid cannot replace other fluid; in other words, it has the property of replacing fluids or semi-fluids and prevents adhesion. Internal pressure prevents exudation of synovial fluid, reduces blood supply to inflamed areas, and reduces pain, by the separation of the same. It is probable that the oxygen exerts some inhibitory effect on the pathogenic process.

Psoas Abscess.

The effect of inflation of a psoas abscess is very marked, for the gas appears to find its way up the tortuous sinuses in the sheath of the psoas muscle and to reach the actual area of disease. It was in the treatment of one very hopelessly infected case that had been erroneously opened that I was first led to try the gas.

CASE I.

A Burmese boy, aged 12, had been admitted to hospital with a history of a fall and that two Indian doctors had reduced a dislocation of the hip. Under chloroform a large abscess was found in the thigh, and there being no history or sign of psoas abscess, the same was opened as it was thought to be associated with rough handling. This abscess soon became diffusely distributed throughout the thigh, and on a second examination under an anaesthetic was found to be a psoas abscess. The boy rapidly became worse, with high exacerbations of temperature, and was developing a progressive toxaemia.

It was then that the oxygen gas was tried; the tube from the oxygen cylinder was led into one of the sinuses and the other openings were closed as much as possible. In this way the sinuses were "washed out" twice a day; from the first day of application the temperature never rose above normal again, and the boy made a very rapid recovery. In fourteen days all the sinuses had healed up, but the knee-joint became infected, and after this had been aspirated and inflated with the gas, no further treatment was required. He rapidly gained in weight and, after one month, walked out of hospital without assistance. I had at this time several psoas abscess cases under observation.

CASE II.

A married woman was in an advanced chronic condition of spinal caries, with double psoas abscess. The method used in this case was as follows: The part having been prepared as usual for operation, and an anaesthetic having been given, a Potain's aspirator with a side attachment was introduced and about four pints of pus drawn off; eusol solution was then injected and again drawn off, and the cavity was inflated with oxygen in the way described. The temperature remained normal, the pain in the thigh disappeared, and the swelling in the left iliac region was greatly reduced; the part remained tympanitic for seven days.

This patient has had seven inflations, at intervals of about fourteen days, and each time the amount of pus withdrawn was much less, so that on the last occasion no pus was drawn out at all. Her health improved considerably, and she gained in weight.

CASE III.

A Chinaman, aged about 35, was a very obscure case of pain in the right groin, the thigh remaining flexed. After repeated search, eventually a small track of pus was found in the psoas muscle, and after this had been inflated the flexion and pain were very much better. He had three inflations and then left the hospital.

CASE IV.

A Hindu girl, aged 5, had a large psoas abscess on the right side, which completely disappeared after two inflations, there being no signs of the original disease.

CASE V.

A Mohammedan child, aged 14, had a large psoas abscess from which 10 pints of pus were aspirated, and the cavity was inflated with gas as described. He also had tuberculous caseation in both apices of the lungs. He had three inflations of oxygen gas and on the fourth occasion no pus was found, so the oxygen was not injected. The condition of the lungs improved very remarkably, the active symptoms disappearing, so that there was no cough and the temperature became normal.

This is very important as showing how the improvement in one pathogenic process causes an improvement in the whole system, and the cessation of the toxaemia which must result from such a large accumulation of pus within the body, must also greatly inhibit the progress of the tuberculous process in the lung.

Tuberculous Joints.

For some years previously I had been using a method of flushing tuberculous joints combined with Bier's treatment; without this new oxygen addition this had given very satisfactory results, but I had never had a case of tuberculous joint treated in this way that had been cured by one application of the flushing. The tendency to fibrous ankylosis in tuberculous joints that have apparently recovered, as far as any evidence of active disease is concerned, is the usual experience of everyone, and one has been satisfied with a stiff joint so long as the disease has remained quiescent; but a perfectly useful joint after infection with tubercle is an innovation.

In applying this treatment to a joint the method is somewhat different, as has been already explained, and in the case of the knee-joint the entrance cannula or needle of Potain's aspirator is best introduced into the subcrural bursa, while the exit cannula is best inserted after the joint has been fully distended with fluid, at the most favourably bulging part on the outside of the joint. Iodine solution (one drachm to the pint) is then run through the joint, which is moved about and kneaded; this process is continued until the escaping fluid is quite clear. The purse-string sutures are then introduced under the skin around the cannulas, and the exit cannula is withdrawn, the suture being tied tight. The entrant cannula is then connected with the inflation apparatus by opening the cock, and the joint distended to its fullest capacity; the entrant cannula is then withdrawn and the suture tied tight. The oxygen generally takes ten to fourteen days to become absorbed from the knee-joint.

After the inflation there is a great relief from pain, and the limb can be moved about and massaged without any discomfort whatever, so that the only after-treatment required is to encourage passive movements and general movements of the limb, which may be allowed to rest as the patient desires. The distension of the joint by gas prevents the apposition of inflamed surfaces; it prevents the pouring out of serous fluid by internal pressure to the secreting surfaces; and it has a direct action on the pathological process which it is able to reach. By the cessation of pain and the partial use of the limb the muscular tone is restored, and the general condition of the patient greatly influenced.

Of the seven cases in which this treatment was applied, four were to the knee-joint, two to the elbow-joint, and one was a multiple case of the wrists and finger-joints. These cases all rapidly improved even after one inflation, but the inflations were continued in some cases, as required.

In the case of the smaller joints it is desirable first to distend the joint with fluid by means of a syringe, before introducing the exit tube, if flushing is resorted to, and to introduce the entrant cannula before the fluid has escaped from the exit cannula. In this way the difficulty of hitting a small joint is greatly facilitated.

Chronic Synovitis.

Three cases of chronic synovitis were treated by this method; one inflation only was used, and it was unnecessary to repeat the process. The gas was absorbed at the end of the fourteenth day, after which all three patients walked and used the limb without a recurrence.

Fibrous Ankylosis.

In fibrous ankylosis the inflation treatment is a most valuable adjuvant, because, after breaking down the adhesions, it prevents their re-formation and enables the patient's limb to be utilized directly afterwards. This is particularly noticeable in severe ankylosis, where usually the breaking of adhesions is followed by painful recurrences, and the progress of the case is so slow. By this method there is a very rapid recovery, no after-treatment being necessary beyond use and massage.

Pyaemic Abscess.

In pyaemic abscess cases, where the patient is very weak, this treatment is ideal, as it precludes the necessity of an anaesthetic and of the after-treatment by drainage. In one case on which it was done the patient was *in extremis*, with seven large abscesses; the rapid cessation of toxaemia produced a very quick change towards recovery.

Infected Compound Fracture of Radius.

In a case infected with *B. aerogenes capsulatus* the gas was used as a flush similarly to the first case of psoas abscess treated, and it appeared to have a very rapid sterilizing effect.

It would appear, therefore, that this form of treatment may be divided under three heads: (1) Where it has a mechanical effect only, as in synovitis and fibrous ankylosis; (2) where it has a therapeutic effect only, such as in the flushing of wounds and in the treatment of psoas abscess; and (3) where it has both a therapeutic and a mechanical effect, as, for example, in the treatment of tuberculous joints and tuberculous peritonitis. The cleanliness of the method, the ease of its adoption and its simplicity make it eminently suitable to the general practitioner.

PERSISTENT CLOACA WITH IMPERFORATE ANUS AS A CAUSE OF FOETAL ASCITES.

BY

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CASES of foetal ascites have been recorded from time to time, but in the literature of the subject attention has been directed more particularly to the obstetrical complications of the abnormality than to the developmental and anatomical aspects of the condition. The case herein recorded presents some features of interest, both from the obstetrical and from the embryological points of view.

Clinical History.

The mother was a healthy looking, fairly well developed, primiparous single girl, 21 years of age, who was admitted to the Glasgow Royal Maternity and Women's Hospital on February 19th, 1921, under the care of Dr. James H. Martin. Her previous health had been good and menstruation had been regular till October 1st, 1920, since when there had been amenorrhoea. She was therefore, according to her dates, about four and a half months pregnant. For the first three months there had been fairly constant morning sickness, and during the month preceding admission to hospital there had been very striking and excessive enlargement of the abdomen for the stage of the pregnancy.

On admission, labour had been in progress for about twenty-four hours and the membranes had ruptured. The circulatory, respiratory, and digestive systems showed nothing abnormal. The abdomen, however, was enlarged to full-time dimensions, the foetal head was not palpable, and, although foetal movements were made out, the foetal heart was inaudible. The pelvis was fairly roomy, and the os admitted two fingers. A soft tumour-like mass presented. Posterior to it two small feet and legs could be made out, while higher up, above the swelling, the arms and the ribs could be distinguished. The mass was punctured and a large quantity of fluid (several pints) escaped under high pressure. After the collapse of the mass, the foetus was delivered without further difficulty. The placenta (one and a half pounds in weight) with the cord (twenty inches in length) and the membranes complete was expelled spontaneously ten minutes later. The placenta was normal in appearance, but was not preserved for pathological examination. The puerperium was without incident. The Wassermann reaction of the mother's blood, examined the day after delivery, was negative.

The foetus, showing the enormously distended abdomen.

Pathological Report.

External Appearances. — The foetus, a male, had a total length of 21.5 cm., weighed 935.5 grams, and showed commencing superficial maceration. The thorax appeared small relatively to the large abdomen, but was not out of proportion to the head and limbs. On the left side of the abdomen, just below the ribs, there was a lacerated incised wound 3 to 4 cm. in length, communicating with the abdominal cavity. A rudimentary penis was present but no scrotum, and no vestige of an anus or even of an anal depression could be made out.

Centres of Ossification.—No centres of ossification were present in the mesosternum, astragalus, os calcis, upper epiphysis of tibia, or lower epiphysis of femur, indicating that the stage of development was prior to the sixth lunar month. The epiphyseal lines at both ends of the femur were regular.

Further Examination.—The abdomen obviously had been enormously distended before the evacuation of the fluid at birth, so that the parietes now hung loosely over the abdominal viscera. Most of the abdominal organs showed the effects of pressure. A thickened mass was felt behind the peritoneum of the lower half of the posterior abdominal wall. On closer investigation there was found in this situation a large collapsed and retracted sac, wholly retroperitoneal in position. It had muscular walls varying in thickness up to 5 mm., and was lined with a smooth serous membrane. Microscopical examination confirmed the naked-eye appearances—the muscle proving to be unstriped. The lower end of this sac extended into the pelvis, and was attached by a short thick band of fibrous tissue to the pelvic floor just below the tip of the coccyx. On the internal aspect of the sac, opposite this attachment, there was a minute dimple, but no opening. Passing forwards, the sac blended with the anterior abdominal wall at the umbilicus, which formed a translucent zone separating the recti muscles in this situation. The umbilical vessels from the cord passed outwards and backwards in some gelatinous tissue on the lower surface of the sac. In the upper part of the sac, near the posterior abdominal wall, there was an opening, admitting a fine probe, which was found to communicate with the large intestine. From there the large intestine was normal in form and position, measuring 23.5 cm. from the opening to the ileo-caecal valve. It was filled, but not distended, with meconium. A short distance below and to the left of the entrance of the large intestine there was an irregular incision, corresponding in position with the similar incision on the lateral abdominal wall just below the ribs on the left side.

The caecum, the small intestine, and the stomach were normal in form and position. The kidneys were in their normal position, but were much flattened. The ureters, which were irregularly dilated throughout their course, could be traced downwards till they entered the posterior aspect of the sac above described near its upper end, but below and on either side of the entrance of the large intestine. These orifices were patent, and a fine probe could be passed into them. There was no bladder, and from the rudimentary penis an imperforate fibrous tissue cord passed back in the perineal tissues to blend posteriorly with the sac below the coccyx. The suprarenals (left weighing 0.5 gram, right weighing 0.7 gram) showed nothing of note. The pancreas (0.6 gram) showed early maceration. The liver (47 grams), pale and friable, was found in the usual situation, but much flattened from above downwards—its greatest thickness being 20 mm. It lay in close apposition to the anterior abdominal wall and the

* Working on behalf of the Medical Research Council in the Research Department of the Glasgow Royal Maternity and Women's Hospital.

diaphragm. The spleen (2 grams), pale and soft, was similarly flattened and pressed against the parietes on the left side of the upper abdomen.

The heart (5 grams) showed some congestion of the coronary veins and capillaries. The lungs (left 3.8 grams, right 4.0 grams) were wholly unexpanded, and showed early maceration. The thyroid (0.25 gram) was small and soft, and the thymus (1 gram) showed early maceration. The brain (37 grams) was soft, and showed slight congestion of the meningeal veins and capillaries. The pituitary (0.04 gram) showed nothing of note.

Histology.—Examination was made of brain, lung, liver, spleen, kidney, suprarenal, thymus, thyroid, testis, umbilical cord, anterior abdominal wall, and a portion of the sac wall. Beyond commencing maceration in most of the abdominal organs nothing abnormal was found. Portions of lung, liver, spleen, kidney, suprarenal, and the wall of the retroperitoneal sac were examined for spirochaetes by the method of Levaditi, but with negative result.

COMMENT.

The case above described, while one of "foetal ascites" from the clinical point of view, cannot be regarded as such in the true sense of the term. It is possible, certainly, that some degree of true ascites was present, but there can be no doubt that the greater part, if not the whole, of the abdominal enlargement was produced by the enormously distended bladder-like structure described. A brief consideration of the stages of development of the hind end of the body is sufficient to lead to the conclusion that this muscular-walled sac, lying behind the peritoneum with the relations already detailed, must be a *persistent cloaca.*

In the human embryo the gut, in its earliest stage, ends blindly in the coccygeal region. From the ventral part of the primitive gut in the cloacal region the allantois arises as a pocket or sacculation, which passes forwards as it develops.

The term "cloaca" is defined by Kiebel and Mall[10] as that part of the intestinal bay which lies caudal to the point where the allantois is given off. Into it there open from above the hind gut and the allantois. It is a blind sac, oval in transverse section, and its ventral surface, which is compressed to form an angle, is in contact and fused with the ectoderm of the surface of the body. This area of fusion is known as the cloacal membrane. From the ridge of tissue between the cloacal opening of the intestine and that of the allantois there grows down the septum uro-rectale, which divides off a dorsal portion of the cloaca—the rectum—from the remainder of the cloacal cavity. This division remains incomplete for some time, so that there is a small passage—the cloacal duct—immediately above the cloacal membrane by which the rectum communicates with the ventral remains of the cloaca. The uro-rectal septum ultimately fuses completely with the cloacal membrane, so that the latter becomes divided into an oval membrane which closes the rectum, and a urogenital membrane which closes the ventral remains of the cloaca. The bladder in man is formed chiefly from the ventral portion of the cloaca, but is, in part, of mesodermal origin.

The condition present in the case here described is, then, a primitive one. Development has been arrested before the cloacal duct has been obliterated by the complete fusion of the uro-rectal septum with the cloacal membrane.

Etiology.—Of the origin of *true* foetal ascites it need only be said that it is generally due to a chronic (occasionally an acute) peritonitis. Very rarely does it arise from portal obstruction. The origin of such abnormalities as were present in the case described in this communication is obscure. The occurrence of some inflammatory process at an early stage of embryonic life may be suspected, though its nature and extent cannot be demonstrated. Syphilis can be excluded in the particular case under consideration, but it is probably the chief predisposing factor in many instances. Mall, in a series of 163 malformed human embryos, found in every case evidence in the chorion of uterine inflammation. This he regards as the commonest cause of foetal malformations. Adami[1] states that failure of union of the great thoracico-abdominal fissure is frequently associated with persistence of the cloaca. It is unfortunate that the placenta and membranes were not submitted to detailed examination in the case herein described. The presence of vomiting (apparently abnormal in severity) in the early months of pregnancy is certainly suggestive of the occurrence of some intrauterine disturbance.

"*Foetal Ascites.*"—The term "foetal ascites" has been used not infrequently to describe cases such as this, in which the abdomen of the foetus has been distended with fluid. True foetal ascites does occur, and corresponds more or less to ascites in later life. Peritoneal inflammation can frequently be demonstrated, but in the case under consideration histological examination failed to reveal any inflammatory reaction in the peritoneum.

The subject is dealt with at some length by Ballantyne,[2] who points out the frequency with which abdominal distension from other causes has been placed in the category of foetal ascites.

Fordyce[7] gives a comprehensive review of the subject and of its literature up to the end of last century. He includes in his communication a table analysing a number of publications, and showing the relative frequency of the commoner developmental anomalies associated with abdominal distension in the foetus. Since that time much work has been done on the development of the hind end of the body, and has helped to a better understanding of the abnormalities of development found in this region, but the subject is one the details of which are still matters of controversy.

Keith[9] examined and classified 114 specimens, and discussed certain aspects of their etiology. His paper raises many points of interest in connexion with the type of case herein considered.

Cases have been described, and are referred to by Fordyce,[7] in which abdominal enlargement in the foetus has been produced by distension of the bladder and often associated with distension of the ureters and the renal pelvis. In these cases the anus was patent.

There is another small group of cases, also mentioned by Fordyce, in which abdominal enlargement in the foetus was due to the presence of a large intra-abdominal sac which was regarded as the distended bladder. The large intestine was described as opening into this sac, and the anus was imperforate.

In view of the advances in the study of the embryology of the hind end of the body since these descriptions were published, the suggestion may be permitted that in at least a proportion of this second group the abnormality was due not to a distended bladder but to a persistent and distended cloaca.

Summary.

1. A case is described in which extreme abdominal distension in a four and a half months' foetus led to dystocia.
2. From the *post-mortem* findings it is concluded that the apparent "foetal ascites" was due to the presence of a greatly distended persistent cloaca.
3. The presence of imperforate anus and other anomalies is demonstrated, and a sketch of the embryology of the parts affected is given.
4. The etiology is discussed and a short review of the literature is made.

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CURETTAGE AND THE TREATMENT OF UTERINE HAEMORRHAGE.*

BY

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IN a short paper it is, of course, neither possible nor advisable to attempt even a brief survey in all its aspects of a subject so comprehensive as the treatment of uterine haemorrhage. It will be more profitable to focus attention upon a few of those conditions where haemorrhage is an important symptom, and where some difficulty arises in assigning a cause, even after curettage has been performed. I propose, therefore, to omit from consideration cases of uterine bleeding directly dependent upon the presence within or without the uterus of a fertilized ovum. Pregnancy introduces problems of its own and opens up a field far too large for discussion on this occasion. The cases where the problem in diagnosis and treatment is greatest are those where gross physical signs are absent, and where haemorrhage may almost be termed functional in type. It is to this group that I particularly wish to draw your attention.

Much of the difficulty in connexion with bleeding of uterine origin arises from two facts. In the first place, we have to deal with a bodily system where haemorrhage is a physiological function, and, moreover, where variations

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between the normal and abnormal are so common and often so fine that it is not easy to define always where physiology ends and pathology begins. Secondly, the endometrium is frequently but a reflector of the genital endocrinic system as a whole, as well as being an organ which forms an important link in the chain. Much attention has been given within recent years to the anatomical study of the endometrium in the human female, both during the state of rest and during the phase of actual menstrual activity. These phases are now well known and generally recognized, and I need not refer to them in detail. Upon the correctness of our conception as to the anatomy and physiology of menstruation depends, however, to a very large extent, an explanation of the causes underlying pathological haemorrhage, as well as its diagnosis and treatment.

The views that I hold are based upon the results of an inquiry into the subject made during the years 1910–14 and published in 1914.[1] Since this date additional facts have been forthcoming,[2] and hitherto I have had no reason to alter the opinions then expressed. The menstrual function in the human female I regard as being analogous to the pro-oestrum of animals, the menstrual discharge consisting of the products of digestion of minute coagula formed in the endometrium and uterine cavity, mixed with secretion of the uterine glands. Under normal conditions haemorrhage from the menstruating endometrium is a slow ooze, and there is ample time for the blood to be brought into relation with the stroma cells which contain the thrombotic elements, and secretion of the uterine glands which effects thrombolysis. Thrombo-kinetic power of the endometrium is present both in the non-menstruating and menstruating uterus, and clinically the phenomenon is often evident during curettage. It is well known how rapidly blood clots when mixed with curetted fragments of endometrium, and to obtain tissue unmixed with clot it is necessary to receive the curetted material into some such solution as sodium citrate.

The Menstrual Theory.

There can be little doubt, both on clinical and experimental grounds, that the prime factor in the production of menstrual haemorrhage is the ovary. Removal of both organs causes permanent cessation of the function, and subsequent grafting of ovarian tissue is followed on occasion by its restoration, until the grafts undergo fibrosis. Atrophy of the ovaries is associated with diminution and finally cessation of the menstrual discharge. Hyperplasia of the organs leads to excessive uterine bleeding, and in animals increase of blood pressure in the ovaries produces symptoms of pro-oestrum. The stimulus is chemical rather than nervous, since the function is maintained in the case of various paraplegias. It is also probable that the stimulating action of the ovarian secretion is of a quantitative nature, and that a certain degree of concentration in the blood must be reached before the physiological effect is produced. If this concentration is excessive the surplus may be stored in the blood until the next period, and so account for those cases in which menstruation occurs for a short time after double oöphorectomy.

Evidence is not wanting also that the ovarian secretion is unable to act by itself, but requires the addition of some sensitizing agent which enters into combination with it. It is possible, I think, that this substance is calcium. In cases of calcium insufficiency amenorrhoea is usually present and is curable by the administration of calcium salts. On the other hand, excess of calcium produces severe uterine bleeding. During periods when special demand is being made upon the calcium metabolism, as in pregnancy and lactation, menstruation as a general rule ceases, although there is no reason to think that the ovarian function is suppressed.

I do not propose on this occasion to enter into a discussion of the relation of the thyroid, posterior pituitary, mammary, and suprarenal glands to the endometrium, as this has been very fully dealt with by many workers—notably Blair Bell, Swale Vincent, and Bandler. To-day we are concerned more directly with the endometrium. Evidence is gradually accumulating to show that this structure also must be regarded as a ductless gland producing its own hormone and having a specific action upon the sexual economy. It is intimately associated with the function of the ovarian internal secretion, and Bond believes that the two are antagonistic. Certainly the uterine secretion is profoundly influenced, both in its physical and physiological properties, by the presence of the ovary. In rabbits, I found that if the ovaries were present the uterine secretion when injected into the veins of other animals stimulated oestrum. In castrated animals, on the other hand, the uterine secretion was inert. It appears, therefore, as though the uterine hormone stimulated and controlled by the sensitized ovarian secretion is absorbed, and produces that dilatation of vessels characteristic of the late stages of pro-oestrum and favouring fertilization. In the human female the local congestion associated with sudden outpouring of the glandular secretion containing the excess of calcium is associated with rupture of capillaries and production of endometrial oozing which we term menstruation. This haemorrhage is an unnecessary adjunct, and Nature has endeavoured to limit its amount to the minimum by providing an elaborate machinery to control it, and also the means of removing the products of such bleeding as occurs. Menstruation, in other words, is Nature's aid to fertilization and pregnancy, and owing to the elaborate means she takes to achieve this purpose, it is not surprising that the balance is so easily upset, and that one so frequently encounters anomalies of function.

Clinical evidence is not wanting to prove the correctness of the views expressed. First, with regard to the question of the menstrual clot, many women habitually pass small disintegrated clots in the course of a normal period without pain or discomfort. This fact is easily confirmed by inquiry, or, better still, by investigation of the menstrual discharge. Quite recently a well-marked instance of reversion to the more primitive type of menstruation was brought to my notice in the case of a girl of 18, who for two years, since the onset of the menstrual function, has passed only a complete and typical menstrual clot at each period. These clots are passed without pain or discomfort of any kind, and in every other particular the girl is fully developed. In a case of this kind treatment is quite unnecessary, as the functional anomaly is purely atavistic, although most interesting from the point of view of evolution.

Another functional abnormality bearing upon the same problem is seen in some cases of so-called functional amenorrhoea. If such are closely investigated it will be found that amenorrhoea in the true sense does not exist. The uterus is normal in size and the endometrium normal in appearance. The monthly hyperaemia, however, is not sufficient to produce rupture of capillaries, and diapedesis of a few red cells into the stroma is all that occurs. The menstrual discharge consists in these cases solely of the secretion of uterine glands. The usual menstrual molimina are present, but the uterine discharge is not red. It is often disregarded by the patient and considered as being leucorrhoeal in nature. In exactly the same way anomaly may and does occur in the opposite direction, leading to intense congestion of the endometrium and very profuse haemorrhage. To this I shall refer shortly.

The Cessation of Menstrual Haemorrhage.

As to the factors which normally cause cessation of the menstrual flux—factors which are also all-important in the production of pathological haemorrhage—the machinery involved is undoubtedly complex. First and foremost, if we accept the quantitative theory of ovarian secretion, it will be readily understood that when the fixed degree of concentration is reduced, the stimulus is removed and the menstrual flow must cease. Similarly, if we regard the ovarian hormone as a complex body requiring for its physiological action the aid of calcium, a stage must be reached when it will become inactive, owing to the outpouring of calcium salts by the uterine glands.

Furthermore, we have to consider the thrombokinetic function of the endometrium. As soon as the uterine glands stop secreting, the thrombolytic factor ceases, and the endometrial vessels are immediately closed by rapid physiological thrombosis. Finally, the uterine muscular contractions which take place during "menstrual labour" exert some influence in controlling the haemorrhage by limiting and regulating the supply of blood to the endometrium. Periodicity of the function is probably entirely dependent upon general metabolism in which the whole

"sex complex" takes part. It is the product of heredity, evolution and environment, and is comparable to the age of puberty or of the menopause, or to the fact that life's span is "three score years and ten."

Pathological Uterine Haemorrhage.

It has been a legacy and for many years customary to group excessive uterine haemorrhage under one of two headings: menorrhagia and metrorrhagia. If the bleeding occurred at what was normally the active period of the menstrual cycle, the loss was termed menorrhagia. If, on the other hand, haemorrhage took place during the so-called quiescent period, it was designated metrorrhagia. From a clinical standpoint this classification is unsatisfactory, and does not cover the varieties of bleeding met with in practice. For some time past my practice has been to group cases under one of the following headings:

1. *Menorrhagia.*—A term limited to excessive haemorrhage relating simply to the quantity of blood lost at a menstrual period.
2. *Menostaxis.*—Denoting excessive menstruation as regards duration of the flow. The loss in this case may actually not be excessive, but simply a long-drawn-out period, the discharge consisting chiefly of the secretion of the uterine glands.
3. *Epimenorrhoea.*—A term introduced by Blair Bell to signify too frequent menstruation—in other words, an alteration of rhythm. When a combination of (1) and (3) exists, Blair Bell has suggested the term epimenorrhagia.
4. *Metrostaxis.*—Denoting uterine haemorrhage apart from and having no relation with menstrual bleeding. It includes not only all haemorrhages before puberty and after the menopause, but also all irregular bleeding during a woman's active sexual life.

This classification I have found very useful in practice, as it divides one's cases into well-defined groups, and affords a basis for investigation and treatment along rational pathological lines.

I cannot assert too strongly that excessive haemorrhage is, after all, merely a symptom and sign of some underlying pathological cause. Some of these conditions we understand, some we do not. This being so, it is but a confession of ignorance to state that such and such a patient is suffering from menorrhagia, epimenorrhoea, or metrostaxis, and proceed to treat it as a disease. It is just as rational to consider haemoptysis or haematemesis diseases, and to treat these symptoms on general principles, as to bombard a patient with ergot, or curette her uterus without carefully investigating the tissue removed. All excessive uterine bleeding is due either to general or local causes. Speaking generally, the former predominate in young patients and the latter in married and elderly women. The rule is, of course, by no means absolute; but from a useful and practical point of view it is advisable to consider the subject from an epochal standpoint.

By far the greatest number of cases of haemorrhage requiring attention occur either at the commencement or towards the close of active sexual life; in other words, during periods of physiological instability. Since the amount of bleeding is to a large extent under control of the endometrium, a knowledge of its normal microscopical appearances at different stages of the menstrual cycle is essential. It is upon the recognition of abnormal appearances of the fragments removed by the curette that the diagnosis of the cause of pathological bleeding is based. Briefly, three abnormal states of the endometrium occur which demand consideration: (1) Hypertrophy, diffuse or localized; (2) atrophy; and (3) hyperactivity.

Hypertrophy of the Endometrium.

In minor degrees hypertrophy is not uncommon and gives rise to pure menorrhagia. It is commonly a late result of septic infection of a parous uterus, but it also occurs quite independently of this factor. In multiparae it sometimes supervenes upon rapidly repeated pregnancies, and in nulliparae it may be associated with chronic pelvic congestion from various sources and hyperoöphorism. The condition is really what might be termed an excess of zeal on the part of one element in the sexual chain. Occasionally the hypertrophy is extreme, the tissue measuring a quarter of an inch or even more in thickness. The enlarged glands are easily recognizable to the naked eye, and the whole cavity of the uterus is occupied by a thick creamy-like mass of tissue. Such extreme hypertrophy is at times associated with hyperplasia of the ovaries. If this is the case, curettage is merely a palliative measure, and no radical cure can be expected until the ovarian secretion is diminished, either by the action of radium or by double partial oöphorectomy. It is a characteristic feature of this type of haemorrhage that, although severe in amount, clots are very rarely passed. The "loss" consists, so to speak, of the products of intrauterine digestion with the profuse secretion from the hypertrophied glands.

The diagnosis of endometrial hypertrophy is readily made by means of curettage and an investigation of the uterine discharge as to the presence or absence of clots. Treatment must depend upon the cause underlying the hypertrophy. In some instances curettage alone effects a cure. In others the intrauterine application of radium, partial oöphorectomy, or even hysterectomy, may be required. The localized type of endometrial hypertrophy is familiar as the simple or adenomatous uterine polypus. By some this is regarded as an entity, but investigation of a long series reveals all grades and types in evolution, culminating in the diffuse extreme form just described.

The origin of these small localized hyperplasias is obscure, but they almost invariably, when large glands are present, give rise to prolonged and severe haemorrhage. The cause of bleeding is, I believe, similar to that described, and lies in a solution of thrombi by the glandular secretion. Curettage is, of course, essential in the diagnosis of this cause of haemorrhage, and incidentally cures the condition.

Atrophy of the Endometrium.

Just as a hypertrophic endometrium bleeds owing to hyperactivity on the part of the uterine glands, so atrophy produces haemorrhage because of the absence of endometrial stroma with its associated thrombokinase. Under normal circumstances, as the blood escapes into the tissues it is brought into contact with a tissue favouring rapid clotting. If this tissue is deficient, clotting is delayed or absent, and very profuse and prolonged haemorrhage occurs, which of course is liable to continue after the ovarian stimulus is withdrawn. The condition, in fact, bears a close resemblance to the oozing from a wound in a haemophilic subject.

Atrophy of the endometrium may be suspected when severe bleeding associated with the passage of large clots occurs in a woman approaching the menopausal age. It is largely a matter of inco-ordination between ovaries and endometrium. If the ovarian hormonic action ceases before the endometrium atrophies, all is well, and a normal menopause is encountered. If, however, the endometrium antedates the ovaries, then some floodings must and do occur. It is exactly what is to be expected. The presence of clots is significant in this type of haemorrhage, especially in the case of a patient who habitually is free from the same, and serves to distinguish the condition from hypertrophy of the endometrium. Atrophy of the endometrium is often associated with chronic metritis and fibrosis uteri. Subinvolution, on the other hand, and true uterine hypertrophy, such as occurs in single women about the age of the menopause, are commonly combined with hypertrophy and oedema of the endometrium.

The diagnosis of endometrial atrophy is, of course, confirmed by curettage. If with the curette small shreds of tissue only can be removed, and the instrument comes down immediately upon hard dense uterine wall, it can be concluded that atrophy is the cause of the haemorrhage. It may also be recognized that mere curettage will not suffice to control the bleeding, and steps should be taken at the same sitting to control it permanently, either by the intrauterine application of radium or by hysterectomy. Curettage alone gives but very temporary relief in this type of severe menopausal haemorrhage.

A precisely similar state of things exists at the commencement of sexual life if the ovarian function is established before the uterus is completely developed. Fothergill was quite correct at the Liverpool meeting of the British Medical Association when he attributed these haemorrhages of puberty to lack of development, but he confined his remarks to the musculature of the uterus. This is one factor, but I believe that the endometrial factor is equally important. In the case of these haemorrhages of puberty Nature in the vast majority of cases regulates the mechanism, and we only have to wait for the endometrium to develop its full function. This may sometimes

be accelerated by curettage in really severe cases calling urgently for treatment. The other alternative, of course, is to administer an antidote to the ovarian hormone, such as extract of thymus or mammary gland. Radium is also of use in this connexion, but care must be taken to regulate the dosage accurately, or sterility may result.

Radium in the Control of Uterine Haemorrhage.

Time will not permit me to consider in full detail the action of radium in controlling uterine haemorrhage. There is no doubt, however, that in radium we have a very valuable agent for controlling uterine haemorrhage due to ovarian and endometrial inco-ordination. Personally, in those instances where I have employed radium—cases of severe haemorrhage due to hypertrophy or atrophy of the endometrium—I have so far been entirely satisfied with its effects. I can certainly say that had it not been for radium I should have performed hysterectomy in some of these cases.

Dr. Miles Phillips of Sheffield has very kindly placed at my disposal sections of uterus and ovaries removed from two cases in which radium had been used some months previously. My original intention was to speak upon these specimens to-day, but I think it will be better to issue a separate report at a later date upon a subject so important, but which is perhaps a little foreign to the subject now under discussion. I will confine my remarks to-day to observing that as far as the endometrium is concerned, radium appears to produce atrophy, both of glands and stroma, but especially of the former. Hence its great value in checking haemorrhage due to hypertrophy. There is considerable inflammatory reaction as shown by leucocytic infiltration, but there is no evidence of thrombosis of vessels. As regards the ovaries, radium appears to destroy the Graafian follicles, but does not interfere with the stroma. This is a point of considerable interest, as it has a bearing, of course, upon the origin of the ovarian hormone. In checking haemorrhage at puberty and the menopause radium must exert its peripheral action on the ovaries, as the endometrium is inactive from undevelopment or atrophy respectively.

Hyperactivity of the Endometrium.

If sections are taken from various parts of a normal menstruating endometrium and examined under the microscope, it will be found that all present practically the same appearance, both stroma and glands corresponding to the actual stage of the "period." On the other hand, if curettings are examined from some cases of metrostaxis or prolonged menstruation during active sexual life, it will be found that all portions of the endometrium are not affected in the same manner at the same time. To this abnormality I think that the term "hyperactivity of the endometrium" may be applied. The term can, of course, be but relative, since the endometrium is but the reflector of activity of the ovarian and other hormones.

In some cases of uterine haemorrhage lasting from ten to fourteen days the actual loss is often not severe, but the very fact of the period continuing for so long is a source of alarm to the patient. Curettings from such a case show that part of the endometrium is in the pre-menstrual stage and part post-menstrual. There has been a tendency to regard this appearance as a definite lesion of the endometrium and to call it by that long-suffering term "endometritis." There is no evidence of inflammation in the ordinary pathological sense of the word, and the appearance is, I believe, produced by the ovarian hormone acting in small quantities over a lengthy period and stimulating the endometrium to activity in sections.

Clinically, such cases not infrequently follow labour and abortion, and account for many of the examples of menostaxis occurring at intervals remote from pregnancy, but apparently dating from the same. Unless the amount of blood lost at each period is in the aggregate excessive, producing anaemia and debility, no very active treatment need be employed. The actual length of a period is no criterion of the amount of blood lost any more than is a patient's statement. A blood count at the end of the period and investigation of the actual uterine discharge will give a much more reliable basis for treatment. Thyroid gland is useful in treating this type of haemorrhage, possibly by stimulating the calcium metabolism and sensitizing the ovarian hormone. Curettage will always give a clue to the cause of the bleeding if care is taken to examine several portions of the endometrium. It also serves as a temporary check to the haemorrhage, although this is probably unnecessary.

Endometritis as a Cause of Uterine Haemorrhage.

Moynihan has observed that "the wealth of teaching in the textbooks represents rather a legacy flowing from one's ancestors than a fortune newly won by hard endeavour." This is indeed very true of "endometritis," and even to-day we hear the term used much more frequently in connexion with curettage and uterine haemorrhage than is correct or even justifiable. In the older teaching much that was normal and some that was abnormal were grouped together under the term "endometritis." Now "endometritis," in the true sense of the word, a definite inflammation of the endometrium such as may be set up by an infecting agent, bacterial or otherwise, is not so common as is generally supposed, and it is not by any means necessarily associated with uterine haemorrhage. The one cardinal symptom of true endometritis is the occurrence of a discharge, but it is of a muco-purulent or purulent nature. It is true that inflammation may eventually lead in some cases to hypertrophy or atrophy of the endometrium, but it is the very hypertrophy or atrophy that is the cause of the abnormal bleeding and not the inflammation underlying it. "Glandular" and "atrophic endometritis" as such do not exist, and in my opinion the terms should be removed from our phraseology.

In 50 cases classed clinically as "endometritis" by different observers, in which I was able to examine the curetted material, the following results were obtained:

33 patients gave a history of menorrhagia or menostaxis.
17 patients gave a history of metrostaxis.

31 showed hypertrophy of endometrium, especially of the glandular elements.
12 showed atrophy of endometrium, with diminution of both glands and stroma.
7 showed marked leucocytic infiltration and plasma cells.

In other words, 43 exhibited evidence of those changes which recent investigation has shown to be due to many factors other than inflammation. Endometritis of septic origin, in my opinion, does not appear to produce uterine haemorrhage, with one or two exceptions. Thus in a series of 15 cases where curettage was performed for the relief of discharge and pain, the endometrium was infiltrated with plasma cells and leucocytes. Haemorrhage was not a feature of these cases. In fact, in one instance where the discharge was very foul and the clinical diagnosis of "putrid endometritis" made, thrombosis of vessels in the endometrium was present.

The exceptions to which I have referred relate to those instances of acute ascending infections of the genital tract, specially gonorrhoeal, where immediately preceding extension to the Fallopian tubes and peritoneum a sharp uterine haemorrhage sometimes occurs. This is particularly prone to happen if a menstrual period is due. The haemorrhage in such cases may be due to the intense pelvic congestion as a whole, as I have seen it occur in extragenital inflammation, such as acute appendicitis and even in severe influenzal infections.

The Value of Curettage.

In conclusion, may I say a word in favour of curettage? On previous occasions I have more than once entered a protest against the practice of indiscriminate curetting for all cases of obscure uterine haemorrhage. The operation may do good, but the chances are equally against it if the cause of bleeding is not directly dependent upon pregnancy. As a diagnostic procedure, however, curettage is of paramount importance, especially when the microscopical appearances of the endometrium are considered in relation to the history of the case and the character of the uterine discharge.

To curette a uterus and throw away the curettings is comparable to treating haemoptysis without examining the sputum. Another point is, who should examine and report upon the curettings? I unhesitatingly assert that no report is of value unless it is submitted by a pathologist who is conversant with gynaecological pathology, and especially with the endometrium in all its phases. The average pathologist is content if he reports to the effect that "Chorionic villi are present" or absent as the case

may be; that "Decidual cells are present"; or that "There is no evidence of malignancy." This may all be very interesting, and in certain cases, of course, all that is required. It is not sufficient, however, when the cause of an obscure case of uterine haemorrhage is at stake.

If we employ the services of a specially trained pathologist, however, and expect a report that will be useful, we also most follow a strict routine. In the first place, the type of bleeding should be submitted with the specimen to the pathological laboratory, whether it is menorrhagic, menostaxic, epimenorrhoeal, or metrostaxic. The pathologist should also be informed as to the date in the menstrual cycle when curettage was performed. Finally, the tissue submitted should be selected at the time of operation by the surgeon and transmitted to the pathologist as free as possible from blood clot in an appropriate fixing solution. More than one specimen should, of course, be examined. If these precautions are taken curettage becomes a valuable diagnostic asset. My own practice is to examine or have examined without exception all material removed by the curette. Even when the cause of haemorrhage is apparently obvious, surprises are sometimes in store. An apparently simple adenomatous polypus has shown under the microscope malignant characters, or what appeared to be a placental polypus has turned out to be chorion-epithelioma. Hypertrophy, atrophy, or hyperactivity of the endometrium can, of course, only be diagnosed by curettage, although previously suspected from the history.

As a therapeutic measure curettage for uterine haemorrhage must, of course, depend upon the cause of the bleeding. If this is due entirely to the uterus then it may be curative, such as when a simple localized hyperplasia of the endometrium or the products of a gestation are removed. If, on the other hand, it is the result of incoordination of various hormones, it will be but palliative, or fail completely, as in the case of diffuse hypertrophy or atrophy of the endometrium respectively. Under these circumstances, curettage must be combined with other therapeutic measures designed to combat the primary cause. Treatment, to be effective, must depend upon accurate diagnosis. Much of the disappointment and failure that has attended and still attaches to the treatment of uterine bleeding arises because we are content to rely upon empirical methods which sometimes, but not always, prove effective.

Haemorrhage from the uterus is a symptom of such diverse conditions involving the whole realm of medicine that no one panacea such as curettage can ever be expected to prove effective in all cases. It is only by approaching the problem in a logical and routine manner that we can hope to be successful. If, on the other hand, we fail, we at least have the satisfaction of knowing that we have made an honest attempt.

REFERENCES.
[1] Hunterian Lecture, *Lancet*, 1914. [2] *Practitioner's Encyclopaedia of Gynaecology*, edited by J. S. Fairbairn; 1921; Oxford Medical Publications.

DISCUSSION.

Dr. W. R. GROVE (St. Ives) said that in the course of investigations as to calcium deficiency in ulcers a reference had been made by Dr. Vines and himself (in a paper read before the Therapeutic Section on "The etiology and treatment of varicose ulcer") to one case of catarrhal trouble of the uterus in which calcium deficiency was present. He pointed out that calcium salts administered by the mouth were not absorbed into the blood, the whole dose being recoverable from the faeces. They were a good intestinal stimulant, and in large doses an excellent treatment for intestinal parasites. He stated that calcium deficiency was remedied by parathyroid extract—tab. gr. 1/10 daily (Parke, Davis)—administered by the mouth, and that any good result obtained by thyroid extract was probably due to contamination by parathyroid. He also referred to intramuscular injection of calcium chloride with a view to increasing the clotting power of the blood as a palliative treatment in all haemorrhages (BRITISH MEDICAL JOURNAL, July 9th, 1921).

Mr. GORDON LEY (London) congratulated Dr. Beckwith Whitehouse on his excellent paper. He could not agree that menstruation was entirely dependent on ovarian secretion; he had seen many cases in which menstruation had continued after the removal of both ovaries; these cases were too numerous to be explained by imperfect removal owing to the presence of accessory ovarian tissue.

Professor RANKEN LYLE (Newcastle) said that he was in agreement with other speakers that, owing to the highly scientific nature of Dr. Beckwith Whitehouse's paper, it would be very difficult to discuss it without first having the opportunity of studying the whole paper in detail; and he therefore looked forward with the greatest interest to the reading of the paper when it was published.

THE POSITION OF THE MEDICAL PRACTITIONER CALLED IN TO ATTEND A CASE OF PROCURED ABORTION.*

BY

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THE medical profession desires to prevent crime in the interests of the individual and of the community. The question as to how this can best be done is an important and interesting one, because the medical practitioner has a dual identity. He is both a citizen and a trusted adviser of the patient. As a citizen it is incumbent upon him to prevent crime and to aid in the detection of criminal offences. As a doctor he is bound to preserve the secrets of his patients, in accordance with the rule which has been observed by the medical fraternity from time immemorial. Without the fullest confidence in the integrity of the medical man the patient will not tell him the truth and the whole truth. Unless she does so he will be at a great disadvantage in arriving at a correct diagnosis and in formulating a proper scheme of treatment. Reticence on the part of the patient may be a serious disadvantage to her. Hence in most cases of criminal abortion the doctor will find himself on the horns of a dilemma. His duties as a citizen and his obligations to the patient will clash with one another. He must be prepared to make up his mind as to whether he will, in his capacity of citizen, disclose the fact that a crime has been committed, or whether he will maintain professional secrecy and confine his activities to the proper treatment of the case.

In practice the medical profession as a whole rightly puts the patient's interests first and justifies the confidence reposed in it, although this course gives the doctor a feeling of mortification that he is precluded from exposing a crime. Thus by observing the obligation of professional secrecy the medical man will be disregarding his duty as a citizen. He will shield the criminal who committed the offence, the woman who was a willing victim, and those who instigated her to have the operation performed or helped her to procure the services of the abortionist. The doctor's position in these cases is an unpleasant one, but a medical man as such is concerned solely with the proper treatment of the patient, and the fact that she has been a party to a criminal transaction can have no place in regulating his conduct. His duty is to endeavour to save life regardless of the moral character of the patient.

There are three sets of circumstances under which medical men become cognizant of crime of this kind:

1. Before the crime has been committed the doctor may become aware of the intention to have an illegal operation performed.
2. After the crime has been committed but a fatal result to the woman has not occurred.
3. When the crime has been committed and a fatal result has followed.

1. When a doctor becomes aware that a criminal operation is contemplated he can do nothing. Not only is he bound to keep the secret of the patient, but his evidence would be uncorroborated. In a small country town a prominent and influential man seduced a girl of the working class and asked the local doctor to perform an illegal operation. When the doctor refused, the man was very indignant and taunted him with the fact that he knew where he could have the operation done. He subsequently

* A paper read in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association held in Newcastle-on-Tyne, July, 1921.

took the girl to a neighbouring city and had the operation successfully carried out. The doctor was naturally much annoyed that he was unable to expose the crime, but he had been consulted by the man in confidence, and, even if he had decided to abuse that confidence, he had nothing but his own uncorroborated testimony to offer. The crime remained undetected and unpunished, but the doctor had pursued the only course open to him.

2. A medical man most frequently comes to know that a criminal abortion has been accomplished when he is called in to treat the woman for haemorrhage or sepsis. The patient, in her anxiety to give the doctor full particulars, usually discloses the whole circumstances under which the operation was performed, giving the names of those who directed her to the abortionist, of the abortionist, and often also of her paramour. Here the doctor is bound to maintain professional secrecy and allow the criminal and those who aided and abetted the crime to escape. There is no other course open to him.

3. When a doctor is called in to attend a woman who is about to die as a result of having had an illegal operation performed, he is bound to maintain professional secrecy so long as the patient is alive. Her death, however, breaks the contract as to secrecy, and he can then notify the coroner of the circumstances under which the woman died and can assist the authorities in bringing the criminal to justice. It might be argued that the obligation of professional secrecy exists even after the death of the woman. This position can hardly be seriously maintained. The great reason for professional secrecy in these cases is the fact that publicity would injure the future position and prospects of the patient. Her death does away with this reason and allows the punishment of the person whose action caused her death to become the important consideration.

It would seem to be clear that when a doctor in his capacity of a trusted adviser becomes aware of the intention to have a criminal operation performed, he must keep silent. It is equally clear that when he becomes aware that the crime has been committed, he must be silent so long as the patient is alive. It is only after her death that the obligation to remain silent is removed. Consequently the medical profession can only assist in the detection of crime in a small minority of cases of criminal abortion.

Arising out of the consideration of the question of criminal abortion is the relation of the law as at present administered towards those who have been accessories to the crime. Punishment is awarded to the chief culprit whose hand caused the death. Those who put the woman into communication with the criminal operator go free. The person who supplied the money to ensure the performance of the operation also remains unscathed. In a recent case the woman's lover, who was responsible for her trouble, himself employed and paid the operator. Nevertheless, while the operator received a severe sentence, the paramour was allowed to escape with a few admonitory remarks from the judge. In this case the lover was really the most guilty party. He suggested the operation to the girl, although there was no reason why he should not have married her. He tempted a drunken criminal operator with a fee. He paid the fee and sent the operator to the girl's house. Her lover was the primary cause of her death, yet he escaped punishment.

In other cases women friends of the patient have instigated her to have the operation done. They have brought her into touch with the abortionist, and have sometimes afforded facilities for having the operation performed. Of these people the law takes no cognizance, and they remain unpunished. Such a state of things surely requires to be remedied. Until those who administer the law see that just punishment falls upon those who aid and abet the commission of the crime, as well as upon the chief criminal by whose hand the deed is done, criminal abortion will remain one of the great blots on our civilization.

DISCUSSION.

Dr. W. ROBINSON (Sunderland) said he had rarely, to his knowledge, attended a case of procured abortion. He pointed out that a woman, married or single, who took drugs to procure abortion, whether successful or not, legally committed a crime just as much as those who used instruments. He knew of no drug which was efficacious in terminating pregnancy. He knew of one married woman who successfully gave herself an intrauterine injection of glycerin, and another who had used a crochet needle; both recovered. In such cases the great personal danger and the immorality of the act must be pointed out. In the case of a single woman brought into hospital, for whom an abortionist had procured an abortion by operation, he persuaded her to make a statement on oath to a justice of the peace; the latter sent it to the Home Office, but no legal action was ever taken. The patient recovered. Another single woman, upon whom he performed an autopsy, had dosed herself with matches and had died of phosphorus poisoning without aborting. There was an epidemic of similar cases at that time. A practitioner should inform the nearest relative and call in a brother practitioner or consultant in all cases of procured abortion. If a consultation be refused he should give up the case. Should a woman die of a procured abortion no certificate of death must be given and the coroner must be informed. Every practitioner who was called to attend an abortion and "knew" that it had been induced, was *legally* bound to inform the police; if he did not, he would be guilty of concealment (misprision) of a felony, and be liable to legal proceedings (though apparently these were now never taken) or to censure by the judge, if the case came into court. In court, if ordered by the judge, a medical practitioner must state what he knew of the case. There was no law to save him from doing so, neither was there in the case of a solicitor or a priest; only custom in these two protected them.

Dr. J. D. DAVIES (Llanelly) did not agree with Dr. Campbell upon some points. Surely, he said, a man who went to a doctor and asked him to procure an abortion did not come under the protection of professional secrecy. He believed that in all cases where professional abortionists (non-medical) were concerned the medical man called in should do his best to assist in cutting short the career of these individuals, even going to the extent of refusing to attend unless information was given to the police. In these cases the patient was never prosecuted. Where the abortion was self-procured the duty of the doctor was to be silent.

Professor RANKEN LYLE (Newcastle) said that although the views expressed by Dr. Campbell were held by a number of practitioners, he was not in agreement with him. The question of professional secrecy was all very well when no criminal question was involved, but in cases of procured abortion, where a medical man was called in, the reputation of that medical man was at stake, and if any legal question arose, then the medical man would probably be made a party to the crime in a case in which he had concealed the facts. It must be remembered that a doctor's reputation was his most valuable asset, and it was essential that that reputation should be above suspicion, and that he should do nothing that would endanger it in any way. He was of opinion that no medical man should attend such a case without first obtaining the consent of the patient or the patient's friends to inform the police, and if this was refused, he had a perfect right to refuse his attendance on the case. Let them for a moment consider what would happen if the practitioner adopted the other course, that of secrecy. The abortionist would very soon become aware of this, and he would recommend his victims one after another to call in that practitioner, knowing that he would not tell, and he would then be able to carry on his criminal work by the aid and assistance of that practitioner. He might say that he had adopted this rule for many years in Newcastle, and so had many other men, with the result that all the abortionists in that neighbourhood had been run to earth, and any person now desiring an illegal operation had to travel many miles in order to have it performed. He was convinced that if the whole profession adopted this attitude the operation of criminal abortion would almost immediately cease to exist in this country.

A PAMPHLET received from Dr. de Almeida gives the clinical history of a case of syphilitic infection of the chin acquired at a barber's shop from a dirty razor. Such infections are not extremely uncommon, and the author gives a general account of their occurrence and treatment.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CAESAREAN SECTION IN A CASE OF PROLAPSED CORD.

A PRIMIPARA, aged 29, sent for me on October 18th about midday. She was at full time, and the membranes had ruptured whilst she was engaged in her household duties. It was evident that a large quantity of fluid had come away. The os was not dilated, labour pains had commenced; the child was large and the presentation a breech. I saw her again about 5 p.m. The os was dilated to the size of a five-shilling piece, and was rather rigid. Several coils of the cord were presenting, and pulsation was present. Meconium was present in the vaginal discharge. From the general condition of affairs the prospect of delivering a living child *per vias naturales* seemed hopeless. Replacement of the cord was not practicable at the time, and if I had waited would most likely have been unsuccessful in any case. Delay would also have increased the risks of a successful Caesarean section.

I put the facts of the case before the patient, namely the prospect of either a dead child with a normal delivery, or a good chance of success with abdominal section but greater risk to herself. She chose the operation, which I performed with as little delay as possible. The child, a boy, weighed over 9 lb. He is healthy and thriving. Extraction of the child was rather difficult owing to its size and the contraction of the uterus round it. The mother made a practically perfect recovery. The placenta was situated on the anterior wall.

Prolapsed cord is not usually mentioned in textbooks as an indication for Caesarean section, but under the heading of "Prolapsed cord" Berkeley and Bonney recommend Caesarean section as being more likely to give a living child than any other method of treatment. In this case it was undertaken entirely for the sake of the child, and has been completely successful. The technique which I have used in cases of Caesarean section is that detailed by Berkeley and Bonney, which to my mind leaves little room for any improvement.

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A METHOD OF SKIN GRAFTING.

THE surgeons of Queen's Hospital, Sidcup, have done good service in drawing attention to the importance of pressure in securing the permanent adhesion of skin grafts by Thiersch's method. The method of taking an accurate mould and applying it over the graft appears very successful.

An alternative method and one which involves less trouble is to apply very firm pressure, with the ball of the thumb covered by a swab, on the grafts when applied. If this is done evenly and with care they neither adhere to the swab nor slip on the wound surface. Ambrine is then applied carefully with a spray and brush. This serves both as a splint and dressing. For some years in the Kashmir Mission Hospital this method has in our hands proved successful.

Bromley. ERNEST F. NEVE.

OESOPHAGEAL TUMOUR OF THYROID TISSUE.

THE following case, which was shown at the Royal Society of Medicine on November 4th, is believed to be unique.

In the late afternoon of September 13th, 1921, a married woman was admitted to the London Temperance Hospital with the history of having swallowed a fish-bone. The existence of slight pyrexia and a suspicious fullness in the neck suggested the possibility of perforation into the cervical fascial planes, with the dread sequela of infective mediastinitis. Accordingly no time was wasted, and next morning at 8.30 an endoscopic examination was made.

On passing a Brüning's tube no bone was found. But at the level of the second dorsal vertebra a tumour was discovered, attached to the mid-line of the dorsal surface of the oesophageal lining. The protuberance was paler than the surrounding mucosa of the gullet; in size it was smaller than a cherry, but much larger than a pea; in contour it was moriform; and its attachment was by a broad pedicle. Brüning's tube was now discarded, and Mosher's, with distal illumination, was substituted, and by means of Irwin Moore's forceps it was easy to remove the small tumour entire.

I thought to have met with that rare neoplasm, an oesophageal papilloma, but the report of the pathologist, Dr. Sanguinetti, showed that the growth here found was even more rare, for its histology was that of unmixed thyroid tissue in all stages of development. Professor Shattock, who has not seen Dr. Sanguinetti's report, corroborates it in detail, and writes: "Although such aberrant formations have been encountered higher up in the pharynx, their occurrence in the oesophagus does not appear to have been as yet recorded."

It should be added that the patient, who remains so far in perfect health, shows no evidence of thyro-glossal duct remains, either in the neck or in the tongue.

H. LAWSON WHALE, M.D., F.R.C.S.,
Laryngologist to the Hampstead General and the London Temperance Hospitals.
London, W.

HYPERTROPHIC PYLORIC STENOSIS.

IN connexion with the articles on congenital hypertrophic pyloric stenosis in the BRITISH MEDICAL JOURNAL of November 26th, p. 889 et seq., I would like to record the impressions left by reflection on several such cases in my experience during the past twenty years.

If they can be tided over the sixth month the spasm relaxes and the children get well; not only so, but in physique and mental development they become above average. My opinion is that the pyloric spasm and hypertrophy result from hypersensitiveness of the nervous mechanism controlling the muscular wall of the stomach and pylorus. I put this to the proof two years ago in a very severe case. I gave nepenthe (Ferris) one-sixth of a minim before food. I thus bluffed the nerves of the stomach, the food stayed down; at four months the infant would easily have taken first prize at any baby show. Another infant is at present doing well on the same lines.

West Kirby, Cheshire. ADAM MOSS, M.D.

THERAPEUTICS OF PARATHYROID GLAND.

THE remarkable power of quinidine sulphate in the relief of auricular fibrillation, as proved by Sir Thomas Lewis and his co-workers and reported in the BRITISH MEDICAL JOURNAL of October 1st, 1921, has induced me to place on record the virtue of parathyroid gland in a case of paroxysmal tachycardia. Of all distressing conditions to witness few equal those of a severe case of this ailment. The patient is stricken helpless in a moment. While the paroxysm lasts—and it may do so for an hour or two—death is longed for. It resembles a cardiac epilepsy, instead of a cerebral epilepsy.

I had a lady under my care some time since who, when free from a paroxysm, which recurred once or twice a week, passed as a normal healthy woman, and with a sound heart. I used all the usual drugs, without any mitigation of her suffering. What impelled me to give her parathyroid gland 1/10 grain three times a day I cannot call to mind now, but the effect was dramatic at the moment, and by continuing the tabloid she has been for some years free from her distressing paroxysms. I only place the fact on record that it may be further tested.

I have another patient, aged 67, to whom parathyroid was also of great value. She was listless, continually sighing, and was evidently not thriving. She was a very bad feeder, unable to take milk or puddings of any sort; no fat, except butter, and no fruit or salad. She lived mainly on white bread and butter; any other food she could eat was very small in quantity. I came to the conclusion that her restricted diet did not provide sufficient lime salts for the needs of her system, so I gave her calcium lactate, which considerably improved her condition. This being the case, I thought parathyroid gland, from the way it controls calcium metabolism, would prove still more efficient, and so it turned out. She takes 1/10 grain every evening. Her listlessness and sighing have disappeared, and now she is her former self, bright, cheerful, and energetic.

CLEMENT DUKES, M.D., F.R.C.P.Lond.,
Honorary Consulting Physician to Rugby School.
Rugby.

Reports of Societies.

DIAGNOSIS OF ABDOMINAL DISEASES.

A SPECIAL meeting of the Manchester Medical Society was held on November 23rd, in conjunction with the members of the Liverpool Medical Institution, in the Medical Society's reading room, University of Manchester, with Dr. T. A. GOODFELLOW, President of the Manchester Medical Society, in the chair.

Dr. R. J. M. BUCHANAN, in his paper on "Points of clinical interest in the diagnosis of abdominal diseases," emphasized the importance of definite pain as a sign of organic disease. Such terms as "neuritic" and "neurosis" in relation to abdominal disease were mostly wrong and certainly unsafe. So-called functional disease was the last to be sought. He drew attention to abdominal pain caused by disease in the thorax—for example, empyema, pulmonary syphilis, pericarditis, and spinal diseases, and pointed out that pleuritic effusion was an early herald of malignant disease in the abdomen. Too little attention had been paid to careful auscultation of the abdomen, and especially in localizing peritonitis, and the speaker emphasized the value of light auscultation of the abdominal aorta for a bruit which he found present in pathological conditions in which the aorta was pressed upon, especially in malignant disease. This physical sign should be tested as occasion arose. Delay in recuperation of the blood after haematemesis favoured a diagnosis of malignant disease. Profound anaemia often accompanied malignant disease of the caecum. Venous thrombosis was prevalent in malignant disease, and he considered that in any case of thrombosis the viscera should be examined for it. There was an exacerbation of symptoms with pyrexia in cases of leaking gastric and duodenal ulcer. He advocated that all cases in which *x* rays were used a complete "watch through" should be done; disease of the appendix could easily be revealed even to the demonstration of concretions, and in such cases the caecum was often distended, a Jackson's membrane present, and plication called for. He drew attention to the tender spots present on the back in the region of the suprarenals in Addison's disease.

The address was illustrated with water-colour drawings, radiographs, and lantern slides, the former by Mrs. Lowe, and the photographs and slides by Messrs. Holland and Berkeley.

Carcinoma of the Large Intestine.

Mr. G. P. NEWBOLT read a paper upon the diagnosis and treatment of carcinoma of the large intestine, based upon 60 cases upon which he had operated. Of these, 26 occurred in the sigmoid colon, 11 in the splenic flexure, 11 in the caecum, 8 in the hepatic flexure, and 4 in the transverse colon. Out of 33 resections done up to 1917, 12 were alive at present. Sigmoid and splenic growths were, he thought, most favourable, and he emphasized the importance of an early diagnosis in these cases if a successful result was to be obtained, pointing out the difficulty in diagnosis where the growth was small. Radiology had done a good deal in helping the exact location of some of these growths. He considered that the three-stage operation of caecostomy, then excision of the growth with direct union, followed later by closure of the caecostomy, was the ideal operation in the absence of obstruction. Paul's operation was the best in cases where obstruction was present. Caecostomy should be done in patients who were very ill in consequence of acute obstruction. As 37 out of the 60 growths were situated in the sigmoid and splenic regions, he advocated incision on that side in cases in which the situation of the growth had not been exactly diagnosed. Where obstruction existed he advocated exploration from the right side with the view of localizing the growth, and then doing caecostomy, freely removing the growth later when the intestines were empty. He suggested that the median incision was rarely necessary.

Acidosis in Children.

Dr. MURRAY BLIGH read a paper on acidosis in children, in which he referred to the lack of practical assistance in the diagnosis of the condition and in the estimation of its degree; the varieties occur with greater frequency in children. Not only is it met with in a higher proportion of all children admitted to hospital, but it is present also in many attending the out-patient clinics of children's hospitals. He considered there was urgent need of means to precisely measure the extent of the acidotic state in children. He referred to the practice of limiting the amount of food or of actually starving children immediately before operation, and the tendency of the anaesthetic, whether ether or chloroform, to convert a relatively mild ketosis into a severe intoxication. The custom of postponing operations because the tested urine showed the presence of acetone, of saturating the child with sodium bicarbonate, and inflicting a second period of starvation was based on unsound knowledge. The qualitative test for acetone indicated nothing more than that acetone, diacetic acid, and oxybutyric were present in the blood and were being eliminated in the urine. The presence of acetone in the urine of children was misleading as evidence of the depletion of alkali reserve in the blood. It suggested the possibility of dangers which did not exist, and it led to uncontrolled treatment with alkalis. He recalled the experiments of Professor Haldane and his co-workers, in which the eating of large quantities of alkali led to a state of alkalosis, as evidenced by diuresis, increased alveolar air CO_2, and diminution of the ammonia in the urine, but acid bodies also appeared in the urine. Acidosis also occurred without acetonuria, and incidentally with acetonuria, but the result of some other state than excess of acetone bodies.

The causes of acidosis were multiple. Physiologically it was a diminution below certain limits in the alkalinity of blood plasma. Clinically such a condition might result from bacterial infection from fermentation and its resultant lactic acid production; from internal asphyxia with accumulation of CO_2 in the tissues as the result of impeded circulation, from imperfect fat metabolism, from elimination by the kidneys of alkali in excess from any renal defect which inhibited the elimination of acid sodium phosphate and its consequent accumulation in the blood. The physiological changes brought about had been made the basis of methods for the diagnosis of acidosis and the estimation of its degree, but none of them were quite satisfactory. The estimation of CO_2 tension in the alveolar air of infants and young children was not an easy procedure. The apparatus required expert manipulation, and was difficult to use in routine work in private and in hospital. True acidosis was associated with, but was not always due to, the presence of acetone bodies, and the common cause of it seemed clinically to be the result of excess of sodium phosphate in the blood. It was the function of the kidney to excrete it, and it did so normally in considerable quantity. Failure resulted in retention and consequently diminished alkalinity. In most infantile diseases there was an associated pyrexia, and urinary secretion was diminished sometimes to the point of anuria; renal function was inactive even without the existence of true renal disease. Impaired renal function was of high importance as a factor in the production of acidosis; it was frequently associated with ketosis, but the latter was usually of lesser importance.

After the meeting the visitors were entertained to dinner by the members of the Manchester Medical Society.

UNDESCENDED TESTICLE.

A MEETING of the Liverpool Medical Institution took place on November 17th, with the President, Dr. J. E. GEMMELL, in the chair, when Mr. R. C. DUN read a paper on "Undescended and misplaced testicle," reviewing the experimental and clinical work done on the etiology, physiology, and pathology of the condition. The evidence regarding the spermatogenic and internal secretory powers of the undescended and displaced testicle was sifted and the effect of these functions on the various operative procedures was discussed. The technique of the many operations suggested for this condition was detailed, and the results of operations in the author's cases were given.

The following conclusions were drawn: (1) Early operation was not advisable on account of the natural tendency which undoubtedly existed for a testicle, undescended at birth, to descend into its normal position during the first years of life. (2) The associated presence of a hernia did not call for early operation. (3) The age selected for

operation should be from 8 to 10 years. Testicles undescended at that age were unlikely to descend naturally, and symptoms—pain and attacks of orchitis—very frequently developed at this period. (4) Retained testicles which could not be palpated should not be subjected to operation. (5) An undescended testicle should never be removed, on account of its possible spermatogenic power and its certain internal secretory power. (6) Abdominal replacement was not to be recommended, as it was proved experimentally to destroy the spermatogenic function, should any be present, though the internal secretory power was retained. (7) Transplantation into the scrotum was the operation of choice. It could be successfully performed without endangering the vitality of the organ in the majority of cases where an undescended testicle was palpable.

Dr. JOHN HAY related three cases of "Spontaneous pneumothorax," in each case the patient being a male in the early twenties, while the pneumothorax was left-sided; recovery was uneventful, there was no effusion and no pyrexia. He discussed the question of diagnosis, pointing out its extreme difficulty in some cases in the absence of an *x*-ray report. In his opinion this was due to the frequent absence of the more dramatic physical signs so definitely associated with pneumothorax. In a closed dry pneumothorax there was a different grouping of signs, and thus recognition was less easy than in a case where amphoric breathing, metallic tinkling, and metallic echo were present. The character and description of the pain in these cases was discussed, and reference was made to its remarkable similarity to cardiac pain.

Dr. HAWARD BYWATER read a short paper on malarial eye complications.

DISINTOXICATION IN DIABETES AND GOUT.

AT the Royal Society of Medicine on November 28th Dr. GUELPA, of Paris, delivered an "occasional lecture" on his method of disintoxication in the treatment of diabetes and gout. Sir JOHN BLAND-SUTTON presided.

Dr. GUELPA described how the experiments, twenty-five years ago, of Dr. Dujardin-Beaumetz on the correspondence between the rise and fall of body weight in typhoid fever and aggravation or amelioration of the general state, inspired him to seek for a safe and rapid method of disintoxication. He found that success, especially in grave asthenic cases, followed upon vigorous and fearless purgation, accompanied by periods of fasting lasting from one to six days. He attributed the partial failure of his methods on the other side of the Atlantic to the fact that fasting was not associated with the purging; the two were inseparable. He described the results of this treatment as sixfold: (1) Almost complete elimination of the intestinal flora, together with marked attenuation of the virulence of micro-organisms, such as staphylococci, in other parts of the body; (2) fall in blood pressure and regularization of pulse; (3) reduction in volume of the principal viscera, especially the heart and liver; (4) progressive loss of weight, which could be regulated at will; (5) marked improvement or cure of painful joints, muscular stiffness, and respiratory difficulties; (6) general sense of well-being and increased mental alertness. The remainder of Dr. Guelpa's lecture was almost wholly occupied with an account of some twelve cases of diabetes and gout benefited by his methods. The first case in which he applied them was that of a man, apparently in good health, who was passing 100 grams of sugar. After two days' purgation and fasting the sugar disappeared, and on the third day he was passed for life assurance; two years later, he died from another complaint, not diabetes. Another case was that of an army medical officer, with pyelitis and albuminuria, passing 200 grams of sugar, and in exceedingly feeble health, who, after two months' treatment, was able to resume his duties. Disintoxication was conspicuously successful in cases of diabetic gangrene. One of two cases described by Dr. Guelpa was that of a country doctor who, after having had one of his legs amputated for diabetic gangrene, was attacked with gangrene in the other. Disintoxication resulted in recovery, and he was able to continue the use of the limb. While diabetes illustrated the acid type of intoxication, Dr. Guelpa's view was that gout was characterized by an alkaline intoxication with an excess of precipitated earthy salts. Thus it was found that in diabetes an alkaline dietary was indicated, and in gout a diet free from calcium, with a minimum of fruit without vegetables. He described several cases of cure of gout. One was the case of a dignitary in the Roman Catholic church who had swelling and ankylosis in all his joints, so that for six months he was unable to kneel to celebrate Mass. On the twelfth day of treatment, after having had two periods of starvation and purging of four days each, he was able to kneel. The final case, of which Dr. Guelpa showed illustrations, was that of a man of 72, very gravely ill, with a subicteric tint, dyspnoeic at the least movement, who had an enormous aneurysm of the arch of the aorta 13.5 cm. in diameter. Dr. Guelpa considered that aneurysm was a gouty manifestation of the arteries, and therefore a vigorous treatment for gout was undertaken. In three months the man had lost 15 kg. in weight, his acute trouble had disappeared, and the aneurysm had diminished to about 8 cm. The man was to-day in a satisfactory state of health. Dr. Guelpa added that the full details of his treatment were embodied in his book *La Méthode Guelpa*, a copy of which he presented to the society.

Sir WILLIAM WILLCOX said that he thought Dr. Guelpa had scarcely received in this country the praise which was his due as the father of one of the greatest advances in modern medicine.

Dr. PARKES WEBER urged that a history of this treatment, so far as it had extended in all countries, should be written, and thought that no one was better fitted than Dr. Guelpa to compile it. He mentioned that Dr. Guelpa had been anticipated by Bret Harte with his shipwrecked sailor, who, accustomed to secret gluttony, recovered his health through compulsory starvation.

Dr. E. G. GRAHAM LITTLE said that he had had some opportunities, very restricted as yet, of estimating the value of combined purging and fasting. There was no serious discomfort in the application of the method, or at least it was remarkable how soon a patient became amenable to the treatment, and he was quite persuaded that it offered an exceedingly valuable means of rapid elimination of toxic products in the system, which products generated a multitude of bewildering eruptions often difficult to class and still more difficult to cure.

THE TREATMENT OF ANTE-PARTUM HAEMORRHAGE.

AT a meeting of the Sheffield Medico-Chirurgical Society on November 24th Mr. W. W. KING opened a discussion upon the treatment of *ante-partum* haemorrhage. From an analysis of various hospital reports, covering nearly 60,000 deliveries, he found that the incidence of this complication of childbirth was 2.5 per cent., whereas the usual estimate was 0.2 per cent. The speaker confined his remarks to that variety of *ante-partum* haemorrhage which resulted from placenta praevia, and showed that upon theoretical grounds haemorrhage, shock and sepsis should be the three great dangers which would threaten the life and health of the mother. Prematurity, haemorrhage and direct results of treatment were the corresponding causes of foetal death. In the 898 cases of placenta praevia analysed, 7.6 per cent. of the mothers and 55.3 per cent. of the children lost their lives. The figures were identical with those published twenty years ago, and showed that there had been no improvement in the results of treatment during all these years. A study of the maternal mortality showed that 15.9 per cent. of the total deaths were in women who were admitted to hospital in so grave a condition that they died undelivered. "Too late" was the only comment upon these cases. Out of fifty-eight patients who were delivered, 15.7 per cent. died of haemorrhage, 18.9 per cent. of septicaemia, and 51.7 per cent. of shock. Considering the nature of the disease it was surprising that haemorrhage had caused so few of the deaths. This would appear to show that the methods in common use for the arrest of haemorrhage were efficient at least in this respect. They could not shut their eyes to the fact that most, if not all, of the deaths from septicaemia were the result of faulty technique and should therefore have been avoided. Tissue-trauma in the presence of haemorrhage was the great cause of shock, and the need for the gentlest manipulation, and, above all, of avoiding rapid delivery, did not appear even yet to have been fully realized. More than

half the total deaths were due to this cause, and, in the majority of cases, it was clear from the records that death had resulted from the too hasty extraction of the child. The other deaths were not of obstetrical importance with the exception of one from rupture of the uterus. In one other case this catastrophe was recorded, but the patient recovered.

Turning from the general principles to the details of treatment, Mr. King advised palliative treatment in the interests of the premature child when the haemorrhage was slight and the conditions suitable. With severe loss and the patient not in labour Caesarean section was generally the best treatment. In cases in which the patient was in labour Champetier de Ribes's bag should be used in the interests of all living and viable children. Version should only be used for the dead and non-viable. Rupture of the membranes was only safe when the haemorrhage was slight and the os at least half dilated. By adopting palliative treatment in suitable cases under proper conditions, by Caesarean section and by the use of Champetier de Ribes's bag, it should be possible to reduce considerably the enormous foetal mortality of placenta praevia. The maternal death rate would be reduced by early treatment, careful asepsis, and gentle manipulation and slow delivery. Morphine and intravenous glucose were advocated in the prevention and treatment of shock. Strychnine was useless and pituitary extract dangerous.

In the discussion which followed, in which many took part, the PRESIDENT said that his practice had always been to effect the delivery as soon as possible, irrespective of the life of the child. Mr. P. E. BARBER stated that in his experience version was the most satisfactory method of treatment. He asked what evidence was there that patients died of shock. He thought that haemorrhage was the most common cause of death. Professor PHILLIPS, while agreeing upon the whole upon the main propositions of the paper, thought that Caesarean section should be more commonly performed for placenta praevia. He emphasized the danger of rapid delivery and of even slight *post-partum* haemorrhage. Mr. CHISHOLM related his conversion from rapid delivery to the saner method of slow extraction.

SPASMODIC STRICTURE OF THE UTERUS.

A MEETING of the North of England Obstetrical and Gynaecological Society was held at Sheffield on November 18th, with the President, Mr. CARLTON OLDFIELD of Leeds, in the chair.

Mrs. M. A. DOBBIN CRAWFORD (Liverpool) read a short paper on "Spasmodic stricture of the uterus," having adopted this term for the condition previously known as "contraction ring," "Schroeder's ring," or "active retention of the foetus by the uterus." After a brief outline of the history, etiology, and mortality of the condition—the mortality being quoted from Hedley as 40 per cent. to 50 per cent. maternal and 60 per cent. foetal—she described the following case recently under her care:

> The patient was a 4-para, with a previous history of difficult labours, all prolonged and terminated by forceps; two children were stillborn. Labour started at midnight, pains were slight for some hours, and morphine gr. ¼ was given at 8 a.m. The patient was in great agony at 11 a.m., the child's head presenting by the vertex but unfixed; the pelvis was roomy, the os three-quarters dilated, and the membranes intact. The membranes were now ruptured artificially and chloroform was given for two hours. The head still remained unfixed, and intra-uterine examination under deep ether anaesthesia showed a tight ring of muscle around the child's neck and holding up the shoulders. There was no distension or ballooning of the vagina or the lower uterine segment. Anaesthesia was continued with chloroform, and this was followed by spontaneous delivery of a living child one and a half hours later.

The following points were emphasized: (1) The difficulty, danger, and high mortality of active interference; (2) the only abnormality present is a spasm of the uterine muscle; (3) deep anaesthesia diminishes spasm; (4) repeated examinations increase spasm; (5) in the case reported deep and prolonged anaesthesia alone resulted in the spontaneous delivery of a healthy child. The speaker therefore considered the correct treatment of this condition to be deep surgical anaesthesia, prolonged if necessary, and nothing else. Caesarean section would be required only in a few obstinate cases which failed to respond to that treatment.

The PRESIDENT showed a specimen of ovarian pregnancy which he had recently removed. The symptoms were those usually associated with a tubal pregnancy of subacute type.

Professor PHILLIPS (Sheffield) demonstrated a very rare specimen of cystic growth of the cervix uteri. The uterus was bicornuate, with single cervix, and the growth involved the right wall of the latter. Microscopically the growth showed cysts of varying size lined by epithelium of transitional type, and in Professor Phillips's opinion was probably of Wolffian origin.

FIBROIDS AS OBSTETRICAL COMPLICATIONS.

AT a meeting of the Glasgow Obstetrical and Gynaecological Society, held on November 16th in the Faculty Hall, Glasgow, Dr. J. BALFOUR MARSHALL delivered his presidential address on "Fibroids complicating pregnancy, labour, and puerperium," with illustrative cases. Since his undergraduate days great changes had come in the management of pregnancy, parturition, and the puerperium in those cases complicated by uterine fibromyomata. Then it had been the teaching and the practice to induce abortion in many of the cases, and he had personally treated cases in this manner. With the development and present-day comparative safety of laparotomy, Caesarean section, and hysterectomy, the management was now revolutionized. Women suffering from fibroids were frequently sterile, and this was particularly true of the submucous and interstitial varieties of these growths. Cases of multiparous women who unaccountably became sterile often proved due to fibroids. Pregnancy could occur in cases of submucous and even polypoid fibroids, and, although there was a tendency to abort, such pregnancies might proceed to term. One case was recalled in which a colleague had mistaken a fibroid for the head of a small second twin. It was generally accepted that the subserous variety of fibroids had little influence in the production of abortion and premature labour, but the submucous type were particularly apt to lead to such a termination. He had met with abortion due to all varieties of fibroid.

For the further consideration of his subject Dr. Balfour Marshall divided the growths into three classes:

A. Cases which might safely proceed to term.
B. Cases requiring operation, but suitable for myomectomy.
C. Cases requiring hystero-myomectomy.

A. It was doubtful if there was any justification for the induction of abortion, as so many apparently hopeless cases proceeded to term. Large fibroids which had almost occluded the pelvis occasionally rose with the growth of the uterus, aided no doubt later by the development of the lower uterine segment, and normal delivery followed. In the Class A cases the main complaints to be feared were pain and haemorrhage. Rest, sedatives as indicated, and general treatment usually met these cases, which, if not improving, led into Class B.

B. The indications for myomectomy were torsion of a subserous fibroid with necrosis, prolapse or impaction of a subserous fibroid in the pelvis, an anterior fibroid causing retroflexion likely to cause abortion, or incarceration and excessive pain. The cases suitable for this line of treatment were of the subserous type. It was not advisable to remove an interstitial fibroid of any size during pregnancy, because of the haemorrhage attendant, the weakening of the uterine wall, and the frequency of abortion following. In three cases he had performed this operation, two proceeding later to term, the third aborting on the third day.

C. In this class of case the fibroids were generally very extensive and the patient had extreme pain. Rest and the usual methods did not ease her.

In regard to fibroids complicating parturition, the majority of cases which went to term terminated spontaneously, but one had to be prepared to meet more than usually severe labour pains, uterine inertia, malpresentations; and, in neglected cases, rupture of uterus would follow. He recalled a case in which a fibroid in the pouch of Douglas had to be pushed past the brim to permit delivery, and he

felt that had this been impracticable a posterior colpotomy might have been practicable. The correct line of treatment was Caesarean section, in cases of obstruction, provided the patient was otherwise in a state for this operation. In the case of a fibroid which might be removed later by myomectomy, it was best to perform that operation at a later date, but in the presence of extensive fibroids or possible infection, Caesarean hysterectomy was the ideal line of treatment. Under proper supervision craniotomy should never be required, and pulling a child past an obstructing fibroid with forceps was condemned, the results to mother and child being disastrous.

In regard to fibroids complicating the third stage of labour and the puerperium, *post-partum* haemorrhage, both primary and secondary, was apt to occur in a uterus the seat of submucous and subserous fibroids. The possibility of these complications should not be forgotten and means to combat them should always be at hand and used promptly. Another danger, a more serious one, was sepsis. Pressure or injury during parturition might lead to degeneration and subsequent sepsis, or the tumour might be injured during forceps delivery and later become infected. In conclusion, Dr. Balfour Marshall remarked on the extraordinary shrinkage noted in uterine fibroids after a pregnancy; in some of his own cases he had known such diminution in size as to render it impossible for the tumours to be appreciated by bimanual examination.

Professor J. M. MUNRO KERR congratulated Dr. Balfour Marshall on a very interesting and complete communication. In view of the great tolerance of the uterus and of patients to fibroids, he almost felt inclined to look upon pregnancy, labour and the puerperium as the complications. In the past year he had seen four cases in which hysterectomy had been contemplated, but two of these had been carried safely to full time, when the patients had living children by Caesarean section. In some cases only one tumour of several caused the trouble, and often this could be removed by myomectomy. This operation was a simple one in pregnancy, rupture of the uterus was rare after it, and cases were recorded in which operators had gone down as far as the decidua without disturbing the pregnancy.

Dr. W. D. MACFARLANE had seen many cases, and was glad to say that many which had appeared hopeless went to term. He was in agreement that stimulation of the excretory organs was of great advantage. Dr. J. LINDSAY thought that the negative standpoint might not be without interest. He spoke from the experience of the general practitioner, whose attitude was to give pregnancy the preference to fibroids. He had never seen abortion follow fibroids, and in cases where fibroids had been appreciated in early pregnancy, he had not experienced any difficulty in delivery. Dr. CRAIG had had examples of abortion and sterility resulting from fibroids. In one case he had found a small fibroid in the pouch of Douglas; at the second confinement difficulty was experienced, and at the third induction proved necessary. Growth continued, and hysterectomy was ultimately required.

In reply, Dr. BALFOUR MARSHALL expressed satisfaction at the importance laid on the medical treatment of fibroids. The pregnancy was the all-important thing, and every effort must be towards its preservation. He felt disinclined to accept myomectomy with its attendant risks, and in cases in which operation was unavoidable he greatly preferred hysterectomy.

Dr. D. MCINTYRE demonstrated a specimen of a uterus showing placental polypus with interstitial fibroids. The patient, aged 34, gave a history of six weeks' amenorrhoea, succeeded by ten weeks' bleeding. The haemorrhage for a few days before operation had been profuse. The uterus had been removed by Dr. Shannon, to whom he was indebted for the specimen.

A LAW has been passed in Haiti requiring that the doctor or other person attending the birth of a child shall cause it to be vaccinated within one to three months after birth; free vaccination is to be provided by the public health service and the public hospitals and dispensaries; vaccination must be repeated every seven years.

DURING the year 1920 in the birth registration area of the United States 1,508,874 births were reported, corresponding to an annual rate of 23.7 per 1,000 of population; in the same area 836,154 deaths were reported, corresponding to a rate of 13.1 per 1,000.

Rebiews.

CAMBRIDGE WAR LIST.

The War List of the University of Cambridge, 1914–1918, has now appeared in the form of a handsome volume of more than 600 pages.[1] The editor, Mr. G. V. CAREY, Secretary of the University Press, deserves great credit for the skill and loving care with which he has compiled this record of the war service of nearly 14,000 Cambridge men. In the introduction he explains that his work is founded upon the labours of Mr. J. A. Fabb, printer of the *Cambridge Review*, who continued his efforts to keep the list up to date until December, 1919, when the publication of an official list was undertaken by the Syndics of the University Press. Mr. Carey and his helpers (to whom he gives generous praise) have since then checked every name with the official Service lists. The first principle laid down in compiling the record was that it ought to include only those who were Cambridge men at the time of their war service, with one exception—namely, that those who had been admitted for the Michaelmas Term of 1914, and were prevented from coming into residence in that term only by the fact of having joined the forces at the outbreak of war, should not be omitted. The second principle adopted was that only those who served in some branch of His Majesty's Forces prior to the armistice of November 11th, 1918, should be included. The book is arranged by colleges, and at the end there is a complete index of names. There is also a summary showing in tabular form the numbers in the various colleges of those who served, fell, obtained distinctions, etc. In regard to this the editor writes: "If any lover of statistics should feel tempted to test the accuracy of the summary I sincerely hope that the temptation may be too strong for him." The number of those who were killed in action or died of wounds was 2,162, and 308 more were killed accidentally or died of illness. The wounded numbered 2,902. Ten Cambridge men won the V.C., 442 received the D.S.O., 34 with bar and 2 with second bar; 1,531 received the M.C., 122 with bar and 5 with second bar. The D.S.C. and D.F.C. were won by 34 and 21 respectively, and of these 1 each was awarded a bar. Mentions in dispatches numbered 3,810; foreign decorations, 676. In the case of those who won the V.C. extracts are given in full from the *London Gazette* describing the act for which it was awarded. Testing the volume at random, we have been able to find no inaccuracies. A single instance (the choice is ours) will illustrate the method in which the entries are made:

> CAREY, G. V. Major, Rifle Brigade; Major (Ad.), R.A.F.; S.O. 3, Air Ministry. (W.) *M. Belgian Croix de Guerre.* 1906

Reference to the list of abbreviations shows this to mean that Mr. Carey matriculated at his college (Caius) in 1906; that he served in an administrative post as major in the Royal Air Force after holding field rank in the Rifle Brigade; that he was employed at the Air Ministry as staff officer of the third grade; that he was wounded once, mentioned once in dispatches, and received a Belgian decoration. Reference to the title-page shows that he is now a Fellow of Clare. The paper and type and the general appearance of the pages are alike excellent.

PALAEOPATHOLOGY OF EGYPT.

AT first sight it may seem rather strange that the late Sir MARC ARMAND RUFFER'S *Studies in the Palaeopathology of Egypt*[2] should be published by the University of Chicago Press, but the explanation is that these collected papers have been edited by Dr. ROY L. MOODIE, associate professor of anatomy in the University of Illinois, who has in the press a monograph on the palaeontological evidences of disease, to be dedicated to the memory of the late Sir M. A. Ruffer. Although there are several large memoirs with a considerable space devoted to an account of ancient pathology, the present collection of papers, which is an

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[1] *The War List of the University of Cambridge, 1914–1918.* Edited by G. V. Carey, M.A. Cambridge: At the University Press. 1921. (Demy 8vo, pp. xiii+615. 20s. net.)

[2] *Studies in the Palaeopathology of Egypt.* By Sir Marc Armand Ruffer, Kt., C.M.G., M.D. Edited by Roy L. Moodie, Ph.D. Chicago, Illinois: University of Chicago Press. 1921. (Sup. roy. 8vo, pp. 372; plates 71; photos 2. 7.50 dollars; post paid 7.75 dollars.

attempt to take the place of the book Sir M. A. Ruffer intended to bring out, is at present the only separate volume entirely confined to a discussion of palaeopathology. It starts with a short biographical sketch slightly modified, or rather expanded, from a memorial notice by Dr. F. H. Garrison in the *Annals of Medical History* (1919), which shows that Ruffer began the study of pathological lesions in mummies in 1908, and that though Fouquet, who began the study of the subject in 1889, must be reckoned the pioneer, Ruffer made it his own by his technical skill in overcoming the inherent difficulties of satisfactorily cutting and staining the hard and brittle tissues. Of Ruffer's seventy-four published papers nineteen are included in this volume, and of these the first, "On the Histology of Egyptian Mummies," a note describing the technique adopted to obtain macroscopic sections appeared in our columns in 1909, seven others (two of them posthumous) appeared in the *Journal of Pathology and Bacteriology*. Attention has from time to time been called in our columns to Ruffer's papers on this new branch of pathology; the last occasion was in connexion with his posthumous paper communicated to the Historical Section of the Royal Society of Medicine in 1919, on the physical effects of consanguineous marriages in the royal families of ancient Egypt; this paper does not lend any support to the popular view that in-breeding tends to cause degeneracy. The extremely interesting essay on dwarfs and other deformed persons in ancient Egypt contains many attractive references to classical sources; some Egyptologists, instead of regarding dwarfs as pathological, have looked on them as pigmies imported from Central Africa, but Ruffer carefully examined hundreds of illustrations of people depicted in ancient Egyptian monuments without finding a true pigmy, all dwarfs figured in tombs being pathological. He proved that achondroplasia in its present form has existed for at least five thousand years. This article also refers to Pott's disease, on which there is a separate paper, written in conjunction with Professor G. Elliot Smith in 1910. The critical study on prehistoric trephining forms a valuable source of reference, and is one of the articles published after Ruffer's untimely death by enemy action on his way back in 1917 from Salonica, where he had gone to reorganize the sanitary service of the Greek Provisional Government. The printing, and especially the reproduction of the plates, in this beautiful and attractive work deserve the highest praise.

A FRENCH TREATISE ON NEUROLOGY.

UNDER the title *Traité de Pathologie Médicale et de Thérapeutique Appliquée*[3] a new French system of medicine is gradually appearing. Volume V is the first of two devoted to neurology, and the authors concerned in its production are to be congratulated on having issued an attractive textbook which should be a useful investment to the British medical reader with a knowledge of French.

The arrangement of the book is good, being based for the most part on a clinical classification. The first criticism we would make is that the subject of the anatomy and physiology might have been treated more adequately and more as a whole; the second criticism is the relatively small amount of space devoted to morbid anatomy and pathology.

The first volume is divided into nine chapters as follows: I, Diseases of the cerebral hemispheres; II, Diseases of the pons, medulla and mid-brain, and cerebellum; III, Cerebral tumours; IV, Diseases of the spinal cord; V, Diseases of the spinal roots; VI, The acute meningitides; VII, Haemorrhages into the meninges; VIII, Chronic meningitis; IX, Epilepsy.

There is quite an adequate index. Such a division of the subject is of course open to criticism. Why, for example, should disseminated sclerosis be classified as a disease of the spinal cord? Again, in this section (diseases of the spinal cord) the whole subject of subacute spinal degeneration is dismissed in one brief paragraph, surely a curious error of omission in view of the increasing amount of attention which this disease has obtained in recent times. As might be expected in a work emanating from the French school, the subject of aphasia receives very full attention, and considerable space is given to the views of Marie and others; this section is a good and clear exposition of a difficult subject. There is an excellent chapter on hemiplegia, where the numerous clinical varieties of this disturbance of function receive full treatment; the subject gains by being treated first as a whole, separate remarks on the different pathological causes being added subsequently. A short but useful chapter is that on contractures; in it the general neurological aspect of this condition is fully discussed.

Some of the more recent advances in neurology are embodied in two chapters on the pathology of the corpus striatum and on encephalitis lethargica. There is a good chapter on cerebral tumours. It is at first sight surprising that the section devoted to the diseases of the spinal cord should be so short, but this is largely accounted for by the fact that none of the syphilitic affections are described in this volume, a place being accorded to them in a special volume dealing with syphilis only. We confess that we are unable to accept the account of disseminated sclerosis as adequate to the importance of the subject. Acute poliomyelitis is not mentioned, and is presumably treated in another volume, though why epidemic encephalitis should be included and poliomyelitis left out it is difficult to see. There is a useful chapter on the affections of the spinal nerve roots.

No less than twelve different authors have contributed to this volume, and, as usual in such case, the different contributions are unequal. Perhaps the most valuable attribute of the book is the stress laid on the general principles of neurological diagnosis. On the side of therapeutics it has little fresh information to add to what is found in the ordinary textbooks.

The second volume, to which twelve authors have contributed, maintains the same high standard as the first, though its sixteen chapters vary in value. M. Froment's account of paralysis of peripheral nerves is adequate and is illustrated by some quite good figures. The various forms of neuralgia, including causalgia, are treated in a separate chapter and are well described. In the section on polyneuritis, which is quite good, especially in the description of its various clinical forms, no mention is made of beri-beri; this is perhaps unfortunate, even although a full description of the disease was not to be expected in the present volume. There is a chapter on the vascular lesions of the brain and spinal cord, part of which is inevitably somewhat a repetition of the section on hemiplegia in the first volume. M. Crouzon contributes a long and excellent chapter on the familial diseases of the central nervous system, in which the various forms of myopathy are included. In this chapter there is a particularly useful account of the different familial diseases of the eye. A somewhat unconventional but highly practical chapter is that on vertigo. The subject of paralysis agitans occupies an unusually extensive space and in no part of the book is the French school better represented than in this very masterly description of the clinical aspects of the disease; the symptomatology is illustrated by a wealth of detail and a felicity of expression which makes the chapter a pleasure to read. We notice with interest that the author, M. Souques, does not accept as proved Ramsay Hunt's view that the anatomical site of the lesion is in the corpus striatum. The subject of hysteria is presented in an elaborate and well classified chapter filling sixty pages. Neurasthenia, as commonly described in British textbooks, is not even mentioned. Mental diseases are not included in this volume. There is a special chapter on the so-called "reflex" or physiopathic nervous disorders, a condition not generally accepted in this country as a separate entity, apart from the ordinary wasting of muscle which is found round a diseased joint. This so-called reflex disorder is, of course, that to which MM. Babinski and Froment have especially drawn attention.

MM. Roussy and Lhermitte contribute a short chapter on the neurology of the war, which forms a satisfactory digest of our recently acquired experience. A brief chapter on the surgery of the nervous system completes the volume.

These two volumes form an excellent and interesting production, well worth study by the British reader. Their

[3] *Neurologie*, Tomes I and II; being Vols. V and VI of *Traité de Pathologie Médicale et de Thérapeutique Appliquée*. Published under the direction of Emile Sergent, L. Ribadeau-Dumas, and L. Babonneix. Paris: A. Maloine et Fils. 1921. (Demy 8vo. Tome I, pp. 561, 93 figures; Fr. 30. Tome II, pp. 692, 4 plates, 115 figures; Fr. 35.)

chief virtue probably lies in the full and vivid clinical descriptions of the diseases with which they deal, a quality we have learned to expect from our French colleagues and to appreciate very highly.

MENINGOCOCCUS INFECTIONS.

PROFESSOR DOPTER of Paris, already well known as a writer on cerebro-spinal meningitis, has recently published a comprehensive volume entitled *l'Infection Méningococcique*,[4] in which he brings into special prominence the fact that the meningococcus often infects other parts of the body besides the meninges. The early chapters of the book deal with the history, epidemiology, and bacteriology of these infections; the author enumerates the types of the meningococcus as they were recognized in 1914, that is to say, as four in number—namely A, B, C and D. Meningococcus A is the typical meningococcus, while B, C, and D are parameningococci. Coming next to the clinical aspects of meningococcal infections, Professor Dopter begins with the meningococcal coryza indistinguishable from the common cold, and giving rise to similar complications, including bronchopneumonia. Next he describes meningococcal septicaemia, with its variable symptoms and numerous complications, the "malignant purpuric fever" described in Ireland by Stokes in 1866. Here the commonest complication is no doubt arthritis with purulent exudation into the affected joints; further superficial or deep inflammations of the eye are not rare. The occurrence of cerebro-spinal meningitis in this variety of meningococcal infection is recognized as frequent and generally simultaneous. The third form of meningococcal infection described by Professor Dopter is cerebro-spinal meningitis, and he gives an exhaustive discussion of its types, symptoms, complications and diagnosis that covers more than two hundred pages.

The last hundred pages of the volume are devoted to treatment, with particular reference to the use of anti-meningococcal serum. The author's own serum, prepared in 1908, was effective only against infections by meningococcus A, which were almost the only sort met with in France at that time. In 1912 he added a polyvalent anti-parameningococcal serum; up to 1915 only 4 or 5 per cent. of the cases of cerebro-spinal meningitis met with were due to parameningococcal infections. During the war the latter increased to 45 per cent. of the total number, and Professor Dopter describes the various antiserums prepared by Netter and others to meet the new types of infection. It is said that the use of meningococcal vaccines is often definitely useful in cerebro-spinal meningitis, particularly when associated with the production of a fixation abscess. Professor Dopter has made full use of the literature dealing with meningococcal infections, and his book is adequately illustrated; it contains three coloured plates, and not two, as is stated on the title-page. It is without doubt the standard work on the subject with which it deals.

THE SYMPATHETIC SYSTEM.

PROFESSOR ANDRÉ-THOMAS's study of the pilomotor reflex[5] is an elaborate investigation of the main reflexes that may throw light upon the condition of the sympathetic nervous system in health and disease. These are the pilomotor reflex, the reflex of the mammilla and areola, and the scrotal reflex; the author also considers reflex contraction of the oblique unstriped muscle fibres of the skin, and of the muscle fibres connected with the sweat glands. Most of the book is taken up with observations on the changes in these reflexes met with in cases of lesions involving the spinal cord, peripheral nerves, and central nervous system, with particular reference to the pilomotor reflex. The author sums up by stating that this sympathetic reflex may be excited either peripherally, particularly when the cutaneous nerves are stimulated, or centrally by such emotions as terror. It is closely connected with the more complicated reflexes of blushing or sweating.

Professor André-Thomas expresses himself with considerable caution when assessing the value of these reflexes in diagnosis, or the interpretation of their presence or absence in any given instance. His book is the outcome of much patient research, and should interest the physiologist and neurologist.

[4] *L'Infection Méningococcique.* Par le Dr. Ch. Dopter. Paris: J. B. Baillière et Fils. 1921. (Roy. 8vo, pp. 534; 97 figures, 3 plates. Fr. 48.)

[5] *Le réflexe pilomoteur: Etude anatomo-clinique sur le système sympathique.* Par le Dr. André-Thomas. Paris: Masson et Cie. 1921. (Roy. 8vo, pp. vii + 242; 74 figures. Fr. 25 net.)

THE PRODUCTION OF CLEAN MILK.

THERE are few industries in which the bacteriologist can render greater practical assistance than that of dairying. Many of the difficulties attending the production of milk, of butter, and of cheese, which baffled the dairy farmer of the past, are overcome in the present day through scientific research. A very clear exposition of the subject is given in Professor ORLA-JENSEN'S *Dairy Bacteriology*.[6] Less than a third of the book is concerned with bacteriology, the remainder dealing with the production of clean and pure milk, the preservation and the grading of milk, the making of butter, and the ripening processes of different cheeses. It should prove of service, therefore, not only to dairymen and those who have to deal with milk and dairy products, but also to medical officers of health, and especially those whose work lies in dairy farming counties.

"Systematic cleanliness is the golden rule in dairy practice." Very detailed instructions as to the achievement of this golden rule are laid down in the second part of the book, and definite reasons are given for the adoption of certain methods in preference to others. Soda or lime are recommended as cleansers, because with their use the casein is dissolved and the fat is emulsified. The great importance of cleanliness in the act of milking is emphasized in the statement that the most troublesome sources of milk infection are the udder and teats of the cow and the vessels with which the milk comes into contact; compared with these contamination from the air usually plays quite a minor part. The dairyman is reminded that the feeding of a cow is an important factor in determining the consistency of the dung, and that the thinner the dung the dirtier the cow. Moreover, the feed will directly or indirectly determine the nature of the bacteria predominating in the dung, and thus the nature and number of bacteria in the milk. Milking machines are not looked upon with favour by the author. He considers that their numerous corners, cavities, and rubber tubes are so difficult to clean and to sterilize that they require far more intelligent and conscientious attention than they are likely to receive at the hands of the average milker.

The book is very well illustrated, and there is an excellent index. Mr. Arup has performed his task as translator in a manner which would not have been possible if he had not been so intimately acquainted with the subject. He has rendered a service to English readers which we feel sure will be greatly appreciated.

AN EAST-END PIONEER.

IT is some three years since the biography of Canon Barnett,[7] written by Mrs. BARNETT, was first published in two handsome volumes; a notice of the book appeared in our columns on December 28th, 1918, p. 718. The three editions which were issued of the biography were rapidly exhausted and now the publishers have issued a cheaper but unabridged edition at the price of six shillings. Mrs. Barnett's intention is that the book should get into the hands of those numerous people who were interested in her eminent husband but were unable to buy a biographical work at its previous price of twenty-eight shillings. Correspondents from such distant places as China and Uganda had written to her, expressing the wish that the book could be in their mission libraries, and the same wish was expressed by many training colleges and club secretaries in England. University and college "settlements" in the poorer districts of East and South London are now well recognized and the excellent work which they do is greatly appreciated, but the history of their inception, and of the foundation of Toynbee Hall and other kindred establishments, is not so well known. These and many other organized schemes for the betterment of the lives of

[6] *Dairy Bacteriology.* By Orla-Jensen, Ph.D., Professor of Technical Biochemistry in the Polytechnic College, Copenhagen. Translated from the second Danish edition, with additions and revisions by Paul S. Arup, B.Sc., F.I.C. London: J. and A. Churchill. 1921. (Royal 8vo, pp. xii+180; 70 figures. 18s. net.)

[7] *Canon Barnett: His Life, Work, and Friends.* By his Wife. Cheap edition. London: J. Murray. 1921. (Demy 8vo, pp. xxiv + 805; illustrated. 6s. net.)

the poor have taken practical shape since 1873, when the Rev. S. A. Barnett and his newly married wife decided to exchange their comparatively easy-going work at St. Mary's, Bryanston Square, for the frequently disheartening labour in the squalid surroundings of St. Jude's, Whitechapel. The story of this work is related in the present volume, introduced by a new preface by the authoress and by a letter by the Archbishop of York.

NOTES ON BOOKS.

DR. BORIS SIDIS, the author of *Symptomatology, Psychognosis, and Diagnosis of Psychopathic Diseases*,[8] has mainly devoted his attention to dissociated states, and his views would appear to be a development of those formulated by Janet in his earlier works. In this volume he explains his hypothesis of the subconscious and describes his method of treatment by mental exploration in the hypnoidal state. The aim is to reassociate systems which have become dissociated from the personal consciousness. On the whole the book is somewhat confusing and the symptomatological basis of classification here adopted fails to give the reader a clear impression of the various clinical pictures which psychopathic disorders present. The attention given to isolated symptoms is not well proportioned, and it is difficult to understand why a book concerned mainly with the psychoneuroses should contain a hundred pages on hallucinations and about four pages on obsessions and morbid impulses. Dr. Boris Sidis is a strong opponent of psycho-analysis, but his criticisms are too sweeping to have much weight.

In *English for the English: a Chapter on National Education*[9] Mr. GEORGE SAMPSON, with the force derived from twenty-five years' experience in elementary schools, pleads for reform in national education. Of the fifty years since the Education Act of 1870, he considers that the first half was spent in an unconscious demonstration of what education is not, and the second portion in eager attempts to decide what education is. The science of education has its proper place, but it is not the art of teaching, and elementary teaching has failed because too much attention has been paid to the children's heads and too little to their souls. The adaptation of education, at least up to the age of 14 years, to the practical means of gaining a livelihood is controverted, and the importance of a humanizing influence and of instruction in good English is eloquently advocated. The great and immediate means of humane education is, Mr. Sampson contends, English and not an alien language, modern or ancient.

The Little Death[10] is a translation by Mrs. HENRY HEAD of *Der kleine Tod*, by Mrs. IRENE FORBES-MOSSE, the widow of an English officer and the granddaughter of Goethe's Bettina Brentano; it consists of the diary-like letters of a young German woman to her rather glorified lover, who, however, never comes on the scene. The tone is perhaps a little strange, at any rate at first, to an English ear, but the literary style is so good that its charm grows on the reader. The volume is prefaced by a poem beginning, "If I could only die the little, little death," but otherwise the connexion with death is not, to say the least, obtrusive in the text, though there is an underlying touch of rather pleasant melancholy. For its attraction the English text no doubt owes much to Mrs. Henry Head, who shows her skill in the delicate art of translation.

General readers interested in the development of science, and more particularly in the growth of Louis Pasteur's genius and its influence on the progress of scientific thought and method during the last sixty years, cannot do better than read *Pasteur: The History of a Mind*,[11] translated in America from the French of his pupil and colleague DUCLAUX. As an exponent of the experimental method Pasteur has never been surpassed, and the literary skill of Duclaux is admirably displayed in these pages, in which Pasteur's aims, discoveries, failures, and triumphs over difficulties are most clearly and sympathetically set out. The volume is well illustrated, and the translators have provided at its end a series of brief biographies of the men of science and others mentioned in the text. The book may be recommended strongly to the wide circle of general readers.

Mr. WHITBY'S exhaustive book on *Plantation Rubber and the Testing of Rubber*[12] is a practical manual dealing with an industry that extends over almost the whole world and is of ever-increasing importance. About 70,000 tons of rubber were produced in 1910; in 1919 the production was estimated at over 200,000 tons. Many references to the scientific and technical literature of the subject are given, and the book may be recommended to technologists.

The Passing of the Great Race,[13] by Mr. MADISON GRANT, was noticed on its first appearance in our issue of August 18th, 1917. A fourth and revised edition, with a documentary supplement, has now been published, with short prefaces by Professor Fairfield Osborn. The supplement consists of 100 pages and the author's purpose in printing it is "to meet an insistent demand for authorities for the statements made in the body of the book."

[8] *Symptomatology, Psychognosis, and Diagnosis of Psychopathic Diseases.* By Boris Sidis, A.M., Ph.D., M.D. Edinburgh: E. and S. Livingstone. 1921. (Demy 8vo, pp. xix + 448. 21s. net.)

[9] *English for the English: a Chapter on National Education.* By George Sampson. Honorary M.A.Cantab. Cambridge: At the University Press. 1921. (Cr. 8vo, pp. 112 + vii. Price 5s.)

[10] *The Little Death.* By Irene Forbes-Mosse; translated by Mrs. Henry Head. London: George Allen and Unwin, Ltd. (Cr. 8vo, pp. 222. Price 7s. 6d.)

[11] *Pasteur: The History of a Mind.* By E. Duclaux. Translated by E. F. Smith and Florence Hedges. Philadelphia and London: W. B. Saunders Company. (Med. 8vo, pp. 395; 22 figures, 13 plates. 21s. net.)

[12] *Plantation Rubber and the Testing of Rubber.* By G. S. Whitby, Ph.D., M.Sc., A.R.C.Sc. London and New York: Longmans, Green and Co. (Demy 8vo, pp. 575; 8 plates, 48 figures. 28s. net.)

[13] *The Passing of the Great Race, or the Racial Basis of European History.* By Madison Grant. Fourth revised edition. London: G. Bell and Sons, Ltd. 1921. (Med. 8vo, pp. 509; illustrated. 14s. net.

APPLIANCES AND PREPARATIONS.

Instrument for Measuring the "Bridge" in Mastoid Operation.

MR. T. B. JOBSON (London, W.) writes: This instrument, which I have named the Pontimeter, is for measuring the depth of the "bridge" in the mastoid operation. It is a

sliding callipers made in the shape of the Dundas Grant probe, with the Heath ribbed type of handle, which gives great delicacy of touch. In use the slide is drawn up so that the points are about an inch apart. The point A is inserted in the aditus and the slide lowered until the point B rests on the bridge. The depth of the bridge A B can then be read off instantly on the scale, which is graduated in millimetres. The instrument can be used as an ordinary mastoid probe when the points are approximated. It is made by Messrs. Mayer and Phelps.

THE PROPHYLAXIS OF DIPHTHERIA.

THE SCHICK METHOD.

THE Ministry of Health has issued, as Report No. 10 of the "Reports on Public Health and Medical Subjects," a paper by Dr. S. Monckton Copeman, F.R.S., on methods of prophylaxis, with a general introduction by Dr. G. S. Buchanan, C.B.[1]

The immediate occasion of Dr. Copeman's inquiry was an outbreak of diphtheria in the children's ward of the Southmead Infirmary (Bristol). The actual circumstances of the outbreak, which produced forty-nine cases, five fatal, presented no very exceptional features, but an opportunity was afforded of testing some of the methods originated by Schick and widely employed in America. In the first place, Dr. Copeman epitomizes the original observations of Schick leading to the conclusions—

> (*a*) that the susceptibility of an individual may be gauged by a simple cutaneous reaction; that, at birth, most infants are immune, but
>
> (*b*) the survivors subsequently tend to lose this immunity, the curve of immunity as a function of age taking a more or less characteristic form and implying that a considerable proportion retain a natural immunity throughout life.

From these results the practical inference was drawn that it might be possible to identify the susceptible

[1] H.M. Stationery Office, 1921. Through any bookseller. Price 9d. net.

individuals and, either in presence or anticipation of an outbreak, immunize these either actively or passively. Dr. Copeman then describes the technique of active immunization as used by Park and Williams, and the results of Park in applying the Schick test to children in New York. These latter are in fair agreement with those of Schick, indicating that the percentage of persons susceptible to diphtheria is greatest between the ages of six months and four years.

Dr. Copeman next details his own observations, and makes the following points:

1. It is necessary to have command of a reliable standard toxin.

"It would obviously be of importance," he writes, "before the test could be recommended for adoption on a large scale, practically as a routine method for the purpose of estimating the presence or absence of immunity to attack by diphtheria, that arrangements, if necessary under Government auspices, should be made for the provision of a reliable standard toxin which should always be available for distribution, and with which should be issued explicit directions for its storage, dilution and use."

Dr. Copeman himself used a reliable toxin prepared by Dr. O'Brien of the Wellcome Research Laboratories. A convenient dilution is 1/50 of a minimum lethal dose for a 250 gram guinea-pig in 0.2 c.cm. of normal saline.

2. It is essential that the injection should be made intradermally, not under the skin. A sharp needle of fine calibre accurately fitted to the barrel of the syringe must be used, the needle being passed nearly parallel to the skin within its substance. A control injection of toxin heated to 75° C. for ten minutes should be made on the opposite arm.

3. A positive reaction appears at the site of injection in about twenty-four hours, attaining its maximum on the fourth or fifth day. The usual type is a circumscribed area of redness accompanied by slight infiltration of the skin, which will usually measure from one to two centimetres in diameter.

4. A pseudo-reaction often occurs in older children and adults which is thought to be a consequence of irritation by the autolyzed proteins of the bacillus, necessarily present in small amounts in the test solution. Such a pseudo-reaction appears at a much earlier stage than the true reaction, being usually well marked after the lapse of eighteen hours and reaching its maximum in twenty-four. The area of redness is not definitely circumscribed and tends to merge gradually into the colour of the surrounding skin.

"These pseudo-reactions, however, may vary considerably in intensity, and, in some instances, even at the end of four days may show a well-defined area of reddish-brown pigmentation. It is in such instances that the value of a control test, carried out with heated toxin on the opposite arm, becomes specially apparent, as without such a control it may prove exceptionally difficult to arrive at an accurate determination of the true nature of the reaction obtained." Dr. Copeman found that a proportion (5.3 per cent. of his observations) "may show a *combined* or *pseudo-positive* reaction, representing a combination of a positive and pseudo-reaction. In this event the true nature of the reaction should, in our experience at Bristol, be capable of identification by the end of the fourth day, a well-defined positive reaction at the site of the test then contrasting with a partly faded pseudo-reaction at the site of the control injection."

Dr. Copeman then discusses the method of active immunization, and notes that although a much smaller amount of toxin-antitoxin solution was used than by Park, the reactions at Bristol were sometimes severe. On the other hand, of ninety-eight children in the Mitcham schools receiving inoculations only three reacted so severely as to render it advisable to keep them in bed for twenty-four hours. At least three inoculations, of 0.05 c.cm., 0.25 c.cm., and 1.0 c.cm., were given.

The concluding section of the report is devoted to the subject of "carriers." Dr. Copeman writes:

"All the available evidence goes to show that the virulence of the organisms recoverable from 'carriers' varies enormously, some strains being, so far as in the light of our present knowledge it is possible to judge, completely avirulent, a condition most frequently observed in the case of 'contact carriers.' The question whether, and under what circumstances, and to what extent, these apparently harmless strains are capable of regaining virulence requires further study. American observers appear unanimous in the opinion that once virulence is lost it is never regained."

From a review of the published facts the conclusions appear to be that "the diphtheria bacilli in a majority of otherwise healthy carriers are non-virulent; non-virulent bacilli cannot cause diphtheria; there is no proof that non-virulent bacilli are a menace to others or to the community at large."

In an appendix to his report Dr. Copeman describes methods of carrying out experimental tests for virulence, particularly the intracutaneous method of Zingher and Soletsky as modified by O'Brien. This plan effects a considerable economy in the number of guinea-pigs required.

Clinical and Administrative Applications.

In his preliminary note Dr. Buchanan discusses the bearing of the results upon administrative and clinical practice. He considers that

"it would be premature to advise that in English communities general immunization of persons susceptible to diphtheria should be attempted on the New York scale. More information and experience would be necessary before this could be recommended, and it would be necessary to be satisfied that equally good results cannot be obtained by extension and improvement of the methods of diphtheria prevention on which we rely at present."

But there are circumstances in which a more positive expression of opinion is justifiable.

"For example, a parent who for one or another cause is specially anxious that his child should avoid all possible risk of contracting diphtheria may ask whether medical science cannot now provide a means by which, if the susceptibility is great, the child can be protected for at least some years without any substantial risk, and with at most only a transient and insignificant disturbance of health, as the result of the inoculation. A similar question may be asked by nurses and others likely to come much into contact with diphtheria cases, or, again, by medical officers of residential schools and other limited communities at a time when diphtheria is epidemic."

Dr. Buchanan thinks there is good warrant for answering both questions affirmatively, but he emphasizes both of Dr. Copeman's warnings as to the need of a standardized toxin and the occasional severity of the constitutional reaction. Dr. Buchanan observes that the basing of administrative measures upon a routine bacteriological report is not satisfactory.

"These earlier and simpler conceptions have now in large measure been abandoned with the growth of knowledge as to the frequency of the carrier condition (in other diseases as well as diphtheria) and of the very definite distinction which we have now to make between virulent and non-virulent diphtheria bacilli, although these are morphologically and culturally indistinguishable. Moreover, it is generally realized that, in practice, the results of swabbing are materially affected both by the thoroughness of the swabbing itself and by the method of examination and reporting which is followed in the laboratory. In all these circumstances it is important not to attach undue importance to a ritual of routine bacteriological examinations and reports, and not to regard such examinations and reports (as usually obtained in present practice) as the one and only basis of preventive action against diphtheria."

Dr. Buchanan further points out the undesirability of notifying carriers presenting no clinical signs as cases of diphtheria. He says: "Statistically it leads to much confusion; indeed, comparisons between diphtheria notification rates in different areas and in different parts of the country have for some years been rendered very unreliable by reason of uncertainty in this respect. Administratively, the effect may be equally unsatisfactory." Attention is also directed to the substantial danger which may result from depending exclusively upon a bacteriological criterion. Dr. F. Thomson and others have insisted upon the unsatisfactory results of the delay which may be caused by a medical attendant waiting for a report on swabs sent to the bacteriologist before administering antitoxin.

Dr. Buchanan also mentions that the experience of those Metropolitan Asylums Board hospitals which do not carry out routine bacteriological examinations of discharged convalescents is not less favourable in the matter of return cases than that of those institutions which adopt a rule that two or more negative swabbings must be obtained before a patient is discharged.

With regard to schools he says, "the risk of return of a virulent carrier may be greatly lessened without recourse to bacteriological tests, by making sure that the convalescent is clinically recovered, is free from nasal discharge and has a normal throat."

AN ANTIVIVISECTIONIST KNIGHT ERRANT.

WE have received from a correspondent in the United States of America an official report, printed at the Government Printing Office, Washington, of a hearing before a subcommittee of the Committee on the Judiciary, United States Senate, called to consider Senate Bill 758, "to prohibit experiments upon living dogs." The bill was introduced by Senator Myers, and the subcommittee sat for the purpose of hearing anyone who had anything to say in favour of or in opposition to the enactment of the proposed measure. Now, it so happened that Dr. W. R. Hadwen of Gloucester, England, was in the States during the sessions of the subcommittee, and when Senator Myers met Dr. Hadwen (who is president of the British Union for the Abolition of Vivisection, and was once widely heard as an opponent of vaccination) what more natural than that Senator Myers should desire to present him as a witness before the subcommittee? The report before us consists almost entirely of Dr. Hadwen's evidence, given on June 30th, 1921. It is a long time since anything so entertaining has come to our notice in an official document. It appears that copies of the evidence are rare, therefore we will try to display to our readers a few of its gems.

Dr. Hadwen began quietly on the "moral" note. He considers that we have no right to do evil that good may come; that it is wrong to take advantage of the weak in order to gain some alleged benefit. Hence he pressed the subcommittee to accept the contention that dogs who cannot speak for themselves should be the very first to receive consideration on the part of a constitution such as that of the United States. Dr. Hadwen considered that mankind can pay too much for knowledge, and that we are not justified in gaining knowledge if it can be bought only at the cost of the blood and torture of living creatures. So far the witness was expressing on a moral issue an opinion which he is perfectly entitled to, though the senators may have disagreed as to the importance of dogs to the U.S. constitution. He then went on, however, to quote sentences torn from their context, from writings or evidence by Dr. Slosson, Professor Starling, Dr. Klein, Professor Metchnikoff, and others. On these quotations Dr. Hadwen based a number of *ex cathedra* statements which suggest that his emotions ran away with his judgement. For example, a remark of Dr. Slosson that "a human life is nothing compared with a new fact in science," is quoted to show that animal vivisection has led on to human vivisection; and an apparently baseless inference that Dr. Slosson advocates human vivisection is claimed to show that animal vivisection has proved a failure. Next we find the pronouncement, without qualification, that it is "admitted by the leading vivisectors all over the world that you cannot possibly conduct this work apart from the question of pain." Government inspectors are of no use; Dr. Hadwen has no faith in and no sympathy with a Government inspector whose whole vested interest lies in the practice of vivisection.

In the next stage of the evidence the subcommittee was informed that the whole practice of experimentation upon living animals is totally unscientific. "Anatomically and physiologically the condition of the lower animal life is such that you can produce no definite solution of a problem; you cannot argue from animals to man." It is at this point that the real fun of the proceedings began by the interposition of remarks and questions by Senator Ashurst, a member of the subcommittee. The senator, who confessed that he was not a physician but a "jackleg" lawyer, knew that "when you are experimenting you would better experiment upon the pine than upon your mahogany." He likened the pine to the dog and the mahogany to the human being. He suggested to Dr. Hadwen that the testing of human blood and the discovery of the use of pituitary extract were brought about by experiments on animals. Dr. Hadwen, who is evidently well trained in the tricks of debaters when faced by a difficult question, seemed disposed first to gain time by saying, "I will deal with that in a moment," and then to drag a red herring across the trail, and finally to dispose of the question with one of his dogmatic statements. The senator said that an overwhelming proportion of medical witnesses had stated that operations on dogs had proved of incalculable benefit to human beings. As a "humble medical man," Dr. Hadwen inferred that his opinion was exactly the opposite. He is quite prepared to take the position of considering himself right and all the rest wrong; in fact, he knows that he is right, and he knows that they are wrong. One opinion is as good as another. A consensus of 60 or 600 or 6,000 men makes no stronger evidence than the opinion of one single man, because the opinion depends upon the best brain in that majority—that is, one to one. So that settles the question. Let me see, says Dr. Hadwen in effect, what were you saying? Oh, blood pressure. That is a thing everybody knows. "A dog is very greatly different in structure from a human being and different in every particular." And the pituitary gland? "There is a great deal of exaggeration with regard to the pituitary gland, as I know by practical experience." The pituitary gland is nothing more than a by-product of the slaughter-house; assuming that you eat meat (Dr. Hadwen of course does not), it is only a question of getting the pituitary gland, taking it into your chemical laboratory, and finding out its chemical constituents; and then making your preparation. "It is absolutely unnecessary to have carried out any experiments whatever upon animals to have arrived at any scientific result." "Supposing you tested it upon a dog, could you be sure that it would have the same results upon a terrier bitch as it would have upon a human female? No, sir." How that "No, sir," clinches the argument which has been displayed with so much clarity!

We now pass to what Dr. Hadwen describes as an aphorism stated by Professor Starling before the Royal Commission, that the last experiment must always be on man. This, says the witness, is a confession by the leading vivisector that the last experiment must be upon man. "Now, sir, if the last experiment must always be on man, the first scientific experiment must be on man. If the first scientific experiment must be on man, then it stands to logic and common sense that all the previous experiments upon these lower animals must have been at least inconclusive if not misleading," which is as clear as mud in a wineglass. When asked what was the object of an experiment by Dr. Carrol, Dr. Hadwen replied, "I should like to know myself. I am quite sure Dr. Carrol does not." He believes that a great part of vivisection is done out of mere scientific curiosity, with no valid benefit of any kind in contemplation. "We are never told what the results are." "It is something like the brain experiments in surgery—it was a very successful operation, but the patient died." Transplantation experiments and grafting Dr. Hadwen can call nothing but a "mass of arrant tomfoolery from beginning to end." After this Dr. Hadwen asked to go off the line for a moment. "Derail the train," said the chairman; and the witness proceeded to expound the physiology of the nervous system. "The sense of hearing in dogs is much more acute than yours. Or you have your little cat on your lap." "No, no," said the chairman, "I am not fond of cats." Dr. Hadwen: "You are not? Well, I am." And he had noticed that his cat hears mice quicker than he does himself. When, however, he suggested that hawks gather together like tiny specks in the sky, waiting until a body lying upon the ground is dead, we suspect that Dr. Hadwen was confusing this bird with the vulture.

At this point Senator Ashurst interposed again. He had been hurt by the suggestion (made by Senator Myers) that he was indifferent to suffering and the sacrifice of animal life. In order to rebut this charge he stated that for years he had taken a paper called *Dumb Animals*, the motto of which was "Be kind to dumb animals." He wished to raise the matter of rattlesnakes. They exist in large numbers in Arizona, and frequently bite horses and dogs. By making experiments on horses and dogs veterinary surgeons had been able to relieve animals who had been bitten from great pain. Did Dr. Hadwen think that you should wait until a spirited and splendid horse was bitten before you take any precautions in learning how to treat that horse? Would he say, "I am going to a place where rattlesnakes are numerous and my horses may be bitten and may die, but because I am an antivivisectionist I will not make an incision two inches long in order to learn how to treat horses?" To this Dr. Hadwen replied: "I can see that you are a careful and thoughtful man, and a man of the world, and I am positive you would never put your best horse out where rattle-

snakes would be likely to attack it." "Great!" said Senator Ashurst; "Doctor, you live in England where there are no rattlesnakes, except those on exhibition in museums. I am not surprised at your answer, and I am not surprised that your friends applauded, because you know nothing about rattlesnakes."

Dr. Hadwen was then questioned on the subject of skunks. Out West the bite of these animals frequently produces hydrophobia, and it is the custom to examine the brain of the skunk to see if Negri bodies are present. In replying on this procedure, Dr. Hadwen said that these bodies, which were supposed to be a sure indication of rabies in the animal, have turned out to be present in everybody's brain, and the whole theory has been given up, "so that all your medical men down Arizona way are out of date." This answer seems to have staggered the senator for a moment, but he still insisted that treatment in the Pasteur Institute was preventive if taken in time. To which the witness replied that this was merely a *post hoc ad propter hoc* argument, and that the treatment was comparable to hanging a toad round one's neck for the prevention of plague. It would appear that the senator was decidedly one up on the rattlesnakes, but that on the skunk issue the hole was divided, both sides being too dogmatic on a matter which is still *sub judice*. Dr. Hadwen next gained some advantage from an admission by Senator Ashurst that there are physiological idiosyncrasies in all animal life; but Dr. Hadwen's illustration of this fact by the instance of the goat, which can flourish on a diet of hemlock, was countered by Senator Shortridge, who said that a goat can flourish on anything.

These arguments led on to an exposition of Dr. Hadwen's views on pathology. Having admitted some similarity in anatomical structure between a bird and a man, Dr. Hadwen said that you can talk about a bullock's heart and a human heart, but that when a human being gets a bovine heart it is a very different matter; it is a curiosity, and you cannot argue from one to the other! The climax of distortion and of mediaeval pathology was reached when the subcommittee came to discuss the germ theory of disease. Having said that this theory "presupposes that there are certain specific germs which are the causes of specific diseases, and that they inhabit the atmosphere, ready to pounce upon the human being and bring about the disease," Dr. Hadwen added: "I personally deny the whole germ theory of disease." The author of the theory and his successors have been challenged again and again to "get one of these germs from the atmosphere . . . they have not yet accomplished it." Dr. Hadwen has a much better theory of infectious disease, and we may conclude our summary of his delightful evidence by attempting to represent it. Germs are the friends, not the enemies of man; they exist for the purpose of disintegrating morbid material and splitting it up into its primary elements, and so converting that which is bad into that which is good. Consequently they are always found in the excrement of the human body; they are the result of disease and not its cause. The zymotic diseases to which these germs bear special relations and the diseases which are supposed to be infectious invariably arise from insanitary conditions —pollution of the soil, air, or water—which bring about miasmatous conditions, which we inherit and are now striving to throw off in some form or other of zymotic disease—apparently a vicious circle. "I do not consider that there is such a thing in the world as disease. I would rather call it 'condition of disease.'" To this Senator Shortridge could only reply, "Well, men die." Dr. Hadwen does not think that there is any evidence that plague is infectious. Plague, he holds, is a condition of disease brought about by Nature for the purpose of ridding communities of an awful insanitary state of things. Thus, the Hindus live in mud-built houses, and the soil beneath these houses becomes polluted. In these houses they have plague rats, which are great friends of the natives; they live with them, eat with them, and are very friendly. When the soil poison begins to rise, the rats, being the smaller creatures, are the first to be attacked. As soon as the natives see the rats dying they go right out into the open air. They know that the place is doomed; and it is only our bacteriological scientists who talk about rats and fleas and microbes and "all this kind of nonsense," instead of realizing the great truth that the rat is the friend of man and that by his death the native is given a chance to escape.

Dr. Hadwen made some other sweeping assertions about infections, and the general theory he put forward would seem to have been somewhat as follows: Insanitary and unhygienic conditions produce atmospheric conditions which poison the constitution, and the effect produced is according to the strength of the poison and the condition of the individual. When the former is sufficiently strong and the environment (*sic*) of the individual sufficiently weak, you get plague, sweating sickness, and black death. As sanitary conditions improve and the poison is of a less severe type, you will probably get small-pox. With still further improvement and a still lighter poison, you get measles, scarlet fever, and whooping-cough. This shows that the origin of all these diseases—or are they conditions of disease?—is a chemical poison resulting from insanitary conditions affecting the soil and the atmosphere; and if only the medical officer of health knew all this, his work would be greatly simplified.

When Dr. Hadwen came to the anopheles mosquito, he seems to have been unable to find any use for it as a friend of man, though we are quite certain that, like the Bishop of Blois in the *Ingoldsby Legends*, Dr. Hadwen would not take the life of a flea—or a mosquito. He adopted another line of argument. After pointing out that in the view of his medical opponents the anopheles mosquito, before it produces malaria in a healthy man, must feed upon a man who suffers from malaria, Dr. Hadwen triumphantly asks, "Where did the man who supplies the mosquito with his pabulum get his malaria?" Another case of the egg and the chicken, as Senator Shortridge pointed out. "I cannot prove this," says Dr. Hadwen, "but I expect that a mosquito is something like a bluebottle fly that lays its eggs in a piece of effete matter, upon which they feed, and finally succeed in bringing up that effete matter and restoring it, by feeding upon it, to a healthy condition; and I guess the mosquitos do exactly the same thing." So perhaps, after all, the mosquito is like the bluebottle, a friend of man.

The subcommittee then turned to the subject of leprosy—but at this point in the evidence there was a call for a quorum on the floor of the Senate, and the examination of Dr. Hadwen was not resumed, so that the senators will never know what he thought of leprosy.

HOSPITALS IN THE RECONSTRUCTED TERRITORIAL FORCE.

THE Army Medical Department, in organizing the medical service of the reconstructed Territorial Force, has turned its attention to recruiting for the general hospitals, thereby raising the question of the continuance of the *à la suite* system. Last March a letter was sent from the War Office to the Chancellors of the Universities, setting forth a new scheme for hospitals and asking whether the universities and civil hospitals in the same towns and areas as the proposed Territorial general hospitals would be willing to afford the Army Council assistance in the formation of these units. This letter led to correspondence between the Senate of the University of London, through its Academic Registrar, and the War Office; and from this correspondence, as published in the *London University Gazette*, we propose to indicate the views of the two bodies concerned.

The Army Council designs to establish twenty-three Territorial Force general hospitals, situated as follows: Four in the Scottish Command—one at Aberdeen, one at Edinburgh, and two at Glasgow; five in the Northern Command—at Newcastle, Leeds, Sheffield, Lincoln, Leicester; two in the Eastern Command—one at Cambridge and one at Brighton; three in the Western Command—at Liverpool, Manchester, and Cardiff; five in the Southern Command—at Birmingham, Bristol, Oxford, Bath, Gosport; four in the London Command—two in connexion with the City, and two with the County of London. Each hospital will have an establishment of 1,200 beds. On mobilization eight of the hospitals will be capable of expansion to 2,400 beds. The staff of a 1,200 bedded hospital will consist of thirty-two officers and 114 of other ranks. In addition, each general hospital of 1,200 beds will have a surgical team consisting of one surgeon, one anaesthetist, one sister, and one operating-room attendant; hospitals with 2,400 beds will have two teams. The whole of the personnel must be medically fit for

general service, and must take the obligation to serve overseas.

In the event of an emergency arising which requires such overseas service, the hospital personnel will be mobilized as a unit. This condition therefore necessarily entails the abolition of the *à la suite* system. All the medical officers on the staffs of these hospitals will be shown on a general hospital list. Nothing is said in the correspondence with regard to the age limits for these officers, nor with regard to any relationship of age with rank. But certain conditions are laid down for eligibility for appointment to the General Hospital List. The officer must have undergone training in the work of a field ambulance or casualty clearing station, or have served as a battalion medical officer; he must have reached the rank of captain, and he must have completed three and a half years' service. The training referred to is, we presume, annual training for the period customary throughout the Territorial service. But Territorial officers who have been promoted to the rank of captain after six or twelve months' service in the war are eligible for this rank on the general hospital list. The records of officers on the General Hospital List will show their special qualifications and their civil hospital appointments. Specialists' pay without special rank will be attached to certain appointments—for example, medical and surgical specialist, radiologist, pathologist, etc.

The twenty-three general hospitals, while located in the vicinity of universities and civil hospitals, will be distinct establishments, possessing separate administrative headquarters and equipment for training in peace time. The appointments to the staff of each hospital will be in the hands of the Army Council on the advice of the Director-General, Army Medical Service. There will be no differentiation as regards the training of the staffs for administrative and professional work, all officers being expected to undergo training in both branches. No details are given regarding the internal organization of a general hospital; but the general impression may be gathered that a hospital will be constituted very much as was the *à la suite* hospital at the beginning of the war, with a C.O. and a registrar as administrative officers, the rest of the staff being occupied in professional work. Normally the limit of promotion for officers on the staff of a Territorial hospital will be at the rank of lieutenant-colonel; but it is possible that a member of the Territorial Force may be promoted to colonel or major-general. No arrangements are indicated for the formation of a board familiar with the professional status and competence of Territorial officers to advise the Army Medical Department on the appointments to the medical staffs of the hospitals. The formation of hospitals for home service only, staffed by officers who by reason of age or medical category, are not eligible for service overseas, is still under consideration.

To the scheme thus outlined the Senate of the University of London has declined to lend its co-operation. The scheme is regarded as "planned not with a view to greater efficiency of medical and surgical practice, but merely to secure a certain amount of training in military exercises and administration." In the view of the Senate, in all units behind field ambulances—clearing stations, stationary and base hospitals—detailed knowledge of military administration is not necessary for officers other than those who actually carry it out—namely, the commanding officer and his second in command. When the Senate asked what regard would be paid, from the point of view of seniority, to professional status and skill in comparison with administrative experience, the answer of the War Office was "None." Yet the personnel of the hospitals and medical schools affiliated to the University consists of highly skilled physicians and surgeons. In the opinion of the Senate, professional skill and efficiency of these men contributed largely to the high level of medical and surgical treatment reached during the war; and it was to such men that administrative officers had constantly to refer for guidance. Professional skill and status should be taken into account in the matter of seniority, and it is absurd to rank a surgeon to a well known hospital and a medical practitioner with no such experience simply by the length of their Territorial service. The neglect of the advice of skilled physicians, surgeons, and pathologists by administrative officers is ruinous in the long run; but "no lesson is so hard for administrative officers, constantly under the pressure of the combatant branch, to learn as that to delay hospital treatment on the one hand or to return men to duty too soon on the other does not save fighting strength but wastes it."

To this statement of its views the Senate adds the opinion that if the civilian profession is to be employed in war time to the best advantage it is essential that there should be at the War Office an advisory board familiar with the professional status and competence of Territorial and temporary medical officers.

In the absence of more detailed information with regard to the organization of the proposed Territorial General Hospitals it would be unwise to enter at this juncture into any detailed criticism either of the War Office scheme or of the Senate's objections. But with a view to assisting both sides to arrive at a conclusion beneficial to the country and to the army, it may be permissible to recall some of the debatable questions which were raised during the war. Thus, the War Office states that the staff of each hospital with 1,200 beds will consist of thirty-two medical officers. We gathered that in most hospitals, owing to the necessary inclusion of many slight cases of accident, wound, or disease, so large a staff was not required. Especially was this said to be the case in those Territorial General Hospitals in which the staffs consisted entirely of highly trained physicians and surgeons. Possibly the War Office may contemplate introducing amongst the thirty-two medical officers a certain number of officers of the standing of house-surgeons. But if so, this does not appear in the scheme, since a fixed staff of thirty-two might have the very unsatisfactory result of a major or lieutenant-colonel being house-surgeon to a captain. Might not a possible solution be found in attaching to each hospital a smaller expert staff, and drafting younger men, lieutenants or captains, from amongst field ambulance or battalion officers to hospitals for four or six months' training as house-physicians and house-surgeons?

Again, we are not sure that the question of specialist's pay has been properly considered. While it might be satisfactory to the individual who obtained a post to which such pay was attached, we are under the impression that it gave rise to some anomalies. Has the War Office taken evidence on this point? Moreover, may there not be in this connexion a possible solution of some of the difficulties raised by the Senate of the University of London? We are not sure that that body has considered fully the difficulty of adjusting the relationship between the professional and the administrative medical officer. In an organization such as the army a co-ordinating authority is necessary; and it is very difficult to imagine an administrative and a professional head with equal status existing side by side without occasional friction. The Senate of the University of London offers no plans whereby the professional status may be recognized, except in the suggestion that professional skill and status should be taken into account in the matter of seniority. How is it proposed that in a military unit such as a general hospital an officer whose professional status has raised him to the rank of lieutenant-colonel, though he is possessed of no administrative skill, should work with an administrative officer of similar or lower rank? It is a difficult question; but perhaps a partial solution could be found in the matter of pay. In any case we should be glad to see this matter as propounded by the Senate more fully gone into, together with the question of the amount of knowledge of military administration necessary for medical officers of units behind field ambulances.

Finally, we would commend to the Army Medical Department for consideration the suggestion made by the Senate for the formation of a board to advise on the distribution of officers taken on to the Territorial General Hospital List. While such a board may not be necessary in times of peace, is it certain that it can be dispensed with if any need for expansion arose? One of the chief complaints that reached us during the war was in connexion with the distribution and use of the temporary medical officers. Would a board, mainly appointed from the civilian profession, be of use in preventing the occasion for such complaints? If so, would it not be well to institute it during the formation in peace time of Territorial general hospitals, so that it may become versed in the kind of work it would be called upon to undertake in war time?

HEALTH OF SECONDARY SCHOOL CHILDREN.

THE most noticeable section of the report of the Chief Medical Officer of the Board of Education for 1920* is that which deals with the medical inspection of children attending secondary schools. Medical inspection of these pupils became compulsory on the local education authority on the first day of April, 1920. Previous to that date a considerable number of these authorities had included in a more or less complete manner the inspection of secondary school pupils in their general scheme of medical inspection. Despite the difficulties of extending arrangements for inspection last year, 108 out of the 145 county and county borough councils have made satisfactory arrangements. There are no fewer than 1,383 secondary schools recognized by the Board, with a nominal roll of pupils of 378,000. The order of the Board directed that inspection should take place during the first term after the admission of a pupil and each year after the age of 12 has been attained. In regard to the treatment of defects discovered, a circular of the Board pointed out that, "as a rule, the parents and pupils would be able to make their own arrangements, but that, nevertheless, in regard to particular types of defects, it might be desirable, if not necessary, to make available the arrangements already in force for the treatment of children in the elementary schools." Stress is laid on the advisory character of the work of the medical officer of these schools: he should be able to advise as to the health of the pupils as a whole, the hygiene of the school, and in particular on the character of games, drill or other physical exercises, and the educational problems concerned in over-pressure, eye-strain, and home work. Reports from the local authorities show that the medical inspection is welcomed by parent and teacher, and mention is made of the interest taken by the pupils.

A valuable table is given comparing the results of these inspections with those made of children in the elementary schools. There are some striking differences in the two sets of returns. The pupils in the secondary schools show an excess in defects of vision and of hearing, in heart disease both functional and organic, anaemia, and deformities such as spinal curvature. The same set of pupils show a lesser degree of defect in nutrition, cleanliness, squint, otitis media, and adenoids and enlarged tonsils. That there should be any uncleanliness in the pupils of the secondary schools is a matter for remark, indeed the figures indicate that there is considerable room for improvement in this respect. That there should be as high a percentage as 2.37 with unclean heads (and we take it that the return is from somewhat equal proportions of boys and girls which would in effect double the percentage) is serious, and further there were found cases of unclean bodies and scabies.

A very complete examination was made of these children in Cumberland by Dr. Kenneth Fraser. The examination was severe; all children were stripped to the waist, and the slightest defect noted; even a single defective tooth put the child amongst the defectives. Nevertheless, amongst 1,464 children he found no fewer than 369 with no defects of any kind. On the other hand, 110 had teeth so bad as to preclude the possibility of their being in a fit state of health; also there were a number of cases of extremely serious eye defects, one or two children being threatened with blindness, and there were a large number of cases of spinal and other deformities, some of which had reached an incurable stage. He found that directions for treatment were readily responded to, and this made the work much more interesting than inspection at an elementary school; the pupils were interested and able to appreciate the need for physical fitness and the relationship of defects to their future occupation. Dr. Fraser adds:

"It is gratifying to be able to say that I found a progressive improvement in the physique, physical condition, and general health of the children among the higher forms. That is to say, in spite of the physical and mental strain of travelling long distances, increasing pressure of home work, examination, etc., physical fitness is most marked among the older children."

The report attributes this satisfactory state of affairs to the high standard of personal hygiene maintained in most of the schools, the excellent midday dinners provided, the organized games and physical training, and the careful supervision of home work. "The balance between work and play is very well adjusted." On account of complaints that travelling and home work prejudicially affected the health of certain of the pupils a careful comparison was made in one school of children living locally and those travelling from a distance, and, as a matter of fact, there were fewer cases of defect such as anaemia, debility, lung weakness, among the latter than the former group. It should, however, be remembered that children suffering from defects of this kind are less likely to be sent to a secondary school if living many miles distant than if close at hand.

Dr. Fraser makes out a strong case for a preliminary medical examination before children are admitted to these secondary schools.

"The places in these schools are valuable, very valuable, and I regret to say there are a number of children filling places who are quite unfit to benefit by the educational facilities provided."

He mentions children who are practically stone deaf and partially blind, and many with defects which reduce the value received from the education provided, and which could have been remedied prior to admission. He comments on the bearing of these findings on the selection of candidates for the teaching profession.

"I doubt if it is generally realized that one finds many parents complacently proposing to send their children into the teaching profession, either through college or not, as the case may be, with discharging ears, with their mouths full of abscesses, with vision so defective as to be half blind, and with many other classes of defects, without the slightest intention of having these defects remedied even when they are pointed out."

London returns show that 15.1 per cent. of the secondary school children required treatment for defective vision as compared with 12.9 per cent. of the 14-year old children in the elementary schools. In a country district the corresponding figures were 11 per cent. and 5.3 per cent. In the Northampton girls' school the frequency of flat-foot was noted and also that some of the girls wore more or less habitually flat canvas and rubber shoes intended only for the gymnasium.

Commenting on these findings the Chief Medical Officer says that they dispose once for all of the idea that has been expressed from time to time that secondary school pupils, coming as they do for the most part from "better class" homes, need little or no medical supervision. Indeed, though the findings vary according to the area from which each report comes, and no doubt in part according to the observer, one of the most striking features is the extent of defects found.

The chief person upon whom reliance must be placed for seeing that the necessary treatment of children found to be defective is carried through will be the head teacher of the school. Experience shows that he or she has been glad to undertake this responsibility. It will rest with the head of the school even when the school doctor sees the parent, or when there is some special teacher, such as a gymnastic instructor, who might directly carry out the duty. So far it appears that the results have been good, and that a large measure of treatment has been secured. This can be provided more readily by the medical practitioner than in the case of the elementary school child, since the parent is in a sufficiently good position to pay for what is needed. But it is stated that much will depend upon the area: the larger the secondary school provision in proportion to the population, the higher is likely to be the proportion unable to pay the full cost of private and often specialized treatment.

* The Annual Report of the Chief Medical Officer of the Board of Education, 1920. London: His Majesty's Stationery Office. 1921. (Pp. 223. Price 6s. net.)

A BUILDING to contain consulting rooms and clinics for the use of medical practitioners is to be erected by a company at Fort Dodge, Iowa, at a cost of 125,000 dollars.

FIVE hundred Japanese medical men who have studied in Germany have subscribed 490,000 marks for the German medical faculties.

THE number of new cases of tuberculosis reported in New York City in 1920 was 14,035, which contrasts with 14,570 new cases reported in 1919, a decrease of 435 cases, or 4 per cent. During 1920 a total of 23,240 patients attended the tuberculosis clinics of the department of health, but of this number 15,065 were discharged as non-tuberculous.

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THE DIPLOMA IN PUBLIC HEALTH.

ONE of the most important matters brought before the autumn session of the General Medical Council was a Report by the Public Health Committee on revision of the course of study and the examinations for diplomas in Sanitary Science, Public Health and State Medicine. The report was received by the Council after a short debate, reported in the SUPPLEMENT to this issue, and is to be sent down to the medical schools and diploma-granting authorities in order that their criticisms and their views on the whole subject may be placed before the Committee in sufficient time to enable the matter to be finally dealt with at the next session of the Council six months hence. The President of the Council dealt with the question both in his opening address and in closing the discussion. In the meantime it is clear that a very decided advance along the whole line of D.P.H. instruction and examination for the Diploma in Public Health is contemplated by the Council, and it is well that the more outstanding features of the proposed scheme should be noted by all concerned.

At present the student may, if he satisfies the necessary tests, obtain a Diploma in Public Health within nine months or a year after his name first appears upon the *Medical Register*. It is proposed that this be no longer possible, and that at least two years must elapse between the two events. This, it should be observed, would not prevent a candidate from taking his laboratory work immediately after registration and going up for the first of the two D.P.H. examinations as soon as he pleases thereafter, but under the scheme he will not be admitted to the second examination in less than two years from registration. As explained in the discussion, the view is that a new graduate in medicine will be the better qualified to take up the special duties of public health administration if he has become somewhat more mature in his thoughts and in his general outlook than an ordinary medical student is likely to be immediately after obtaining a qualification. The change seems wise. The Council does not specify how the candidate is to pass such part of the two years as is not devoted to study for the Diploma in Public Health, but it is probably hoped that, either through hospital or private practice, the youth may in most cases have learnt something of the proper relations of the public health official alike to the public and to the general practitioner. Harmony and co-operation between the two sets of men is good both for their own work and for the general welfare. It may be assumed that even at present a good medical officer of health who accepts pupils for practical training for the Diploma in Public Health takes the opportunity of impressing on them the need in all circumstances to appreciate the point of view of the general practitioner in regard, for example, to notification of doubtful cases of infectious disease. Yet some experience of the difficulties which a practitioner may meet with is best obtained in actual practice. In that connexion it may be noted that the General Medical Council has under consideration the revision of the whole medical curriculum, and within such revision a prominent place is foreshadowed for the practice of preventive as distinguished from curative medicine. When that result is achieved the foundation for co-operation between the public health official and the private doctor will have been well and truly laid. Meanwhile the proposal of the Council's Public Health Committee as here indicated is a step in the right direction.

In the next place the curriculum for the Diploma in Public Health is to extend over not less than twelve calendar months, and looking to the course of study suggested it is quite likely that "not less than" may commonly come to mean "more than." If so, of course there will be the less time for hospital or other practice within the two years, and the result may be that more than that period will often elapse between registration in medicine and registration in public health. The minimum of twelve calendar months is to include at least five months' laboratory work in bacteriology, parasitology, and chemistry and physics. Not less than 100 hours' instruction (the word "lectures" is not used) is required in various subjects whose relative importance is indicated by the time suggested for each—the Principles of Public Health and Sanitation 30 hours, Epidemiology 20, Sanitary Law and Administration 20, Sanitary Construction and Planning 12, Vital Statistics 10, and Meteorology and Climatology 8. Three months' post-graduate practice in an infectious diseases hospital is also needed, and the minimum of attendances during that period is specified as 60.

It is evident from the proposed regulations that the General Medical Council would attach special weight to practical training under a medical officer of health. The present six months will no longer be reducible to three by substitution of courses of systematic instruction or by resident appointment in an infectious diseases hospital. The training, moreover, is to embrace specific items in the administration of the newer activities of public health departments—maternity and child welfare, school medical services, venereal disease and tuberculosis services, industrial hygiene, and inspection and control of food. It is to be particularly noted that there is no requirement here that the future health officer shall himself be a clinician capable of treating either the ailments of school children or venereal disease or tuberculosis. All that the General Medical Council asks is that he shall be trained as an administrator—and indeed, though all medical knowledge is of use to the official, it would be out of the question in any practicable scheme to include more than organizing and administrative requirements as necessary for a Diploma in Public Health. That is not to say that certificates of special knowledge in special directions, if granted by reputable and responsible bodies, may not be of value in aiding a public authority in making a choice among candidates for an appointment; but in all that connexion the position and experience of the general medical practitioner as family doctor should be borne in mind, and he must not be needlessly ousted from his own sphere of work. It may, we think, be said that the scheme on the whole suggests that this aspect of the matter has not been forgotten.

If the programme presented to the General Medical Council by its Public Health Committee is finally adopted, the responsibility of a health officer who accepts pupils for D.P.H. training will be very real, and no mere formality either of attendance by the student or of certification by the instructor will suffice. How many pupils a medical officer might be able to undertake to teach would depend on

circumstances, but it seems not in the least necessary that the practical instruction should be given only in the public health departments of large cities where there are medical schools. The material available must vary somewhat as between place and place, but throughout the country as a whole, including urban and rural areas alike, there should be no lack of the necessary facilities. Such tuition, however, is bound to be so closely related to, and so dependent on, the arrangements for the daily routine of official work, that the General Medical Council would do well to ask the views not only of the medical schools and licensing authorities but also of the British Medical Association and of the Society of Medical Officers of Health.

The general report by Dr. Bruce Low, who has conducted the recent inspection of examinations in public health throughout the country, is a valuable document, and must have been of the greatest use to the Committee and the Council. Ample testimony was borne to this during the discussion reported this week; the report will be of equal value to the medical schools and licensing authorities when dealing with the subject.

THE PREVENTION OF DIPHTHERIA.

WE print elsewhere in this issue a summary of Dr. S. Monckton Copeman's valuable report on prophylactic measures against diphtheria, which not only brings within a narrow compass much scattered information but also records new observations. To this is prefixed a general survey of the field by Dr. G. S. Buchanan. Dr. Buchanan's judicial analysis of the case is informed with the cautious sagacity which has always characterized the school of epidemiologists, founded by Sir John Simon and including—to mention only those who have passed away—such distinguished students of this particular subject as Sir George Buchanan, Sir William Power, and Sir Richard Thorne-Thorne. The purely administrative aspects of diphtheria we shall not discuss, but some reflections of general interest may be noticed. The first plan of campaign against an infectious disease has always been to concert measures for the segregation of the infective, or potentially infective, from the rest of the community or to prevent the entrance into an uninfected community of porters of disease. The stringency of these measures, at least on paper, was great, their success doubtful for many generations. A plausible explanation of this failure, or partial failure, was the fact that our ancestors had no knowlege of the specific causes of the various diseases, and therefore no means of differentiating the epidemiological goats from the sheep.

So soon as the microbic cause of a disease was isolated—and in no disease was this more satisfactorily achieved than in diphtheria—it was natural to expect that the old system, no longer applied with an undiscriminating harshness mitigated by corruption, might succeed. But the progress of knowledge has shown that the problem is, in its most general form, still unsolved. We have learned that the number of goats in the sheepfold is very much larger and their precise degree of goatishness much less easy to determine than we had supposed. We have also learned that something more than the presence even of the most bearded goat is required to ensure serious harm to the sheep. What the other enemy may be is not clear. Tracts of likely country have been subjected to a tremendous bombardment with biometrical, periodo-grammatical, and historical high explosives, the soil has been ploughed up and the sheep scattered, but the enemy has not yet been located. All that is quite certain is his existence.

In the Milroy Lectures of 1891, after drawing attention to the relation in time and place between ill-defined throat illnesses and epidemic diphtheria, Sir Richard Thorne-Thorne said: "It may be suggested that many of these mild and ill-defined attacks are but cases of ordinary catarrhal sore throat such as is met with everywhere, and this quite irrespective of diphtheria. Or again, it may be assumed that they are cases of true but mild diphtheria in which the more typical symptoms have been so evanescent as to have escaped detection. There is some truth in both these contentions. . . . But I feel convinced that neither of these views fully explains the true relation of the throat-sickness in question to diphtheria occurrences." The clinico-epidemiological problem here stated remains unsolved, and deserves the attention of field workers.

But if we must recognize that the general epidemiological problem of diphtheria is unsolved and that the hopes excited by the first-fruits of bacteriological research have been disappointed, this is not to say that such research has been in vain. On the contrary, it has been perhaps the most rewarding of any laboratory investigations. Of the benefits conferred upon mankind by the introduction of antitoxin it is needless to speak, they form one of the great triumphs of modern medicine. But it is opportune to emphasize the potential advantages of the system based upon Schick's researches. We do not lose sight of the imperfections in the statistical evidence summarized by Dr. Copeman or suggest that the experimental results have been adequately controlled; but we conceive that Dr. Buchanan's opinion that there is a distinct case for the application of the American method in this country, especially perhaps in institutions, is justified by the evidence already available. We also think that the possibility of either a mutation towards or the continuous development of virulence (a possibility which will occur to readers of our quotation from Sir Richard Thorne-Thorne) must be further considered. But there is manifestly some danger of a rigid adhesion to the ritual of bacteriology being accompanied by a neglect of its scientific essence; Dr. Buchanan, in fact, points out that this is a very real danger.

The publication of Dr. Copeman's report is opportune and should provoke a discussion which will do good both in furthering genuine team work and putting various aspects of the problem of epidemic diphtheria and its prevention into the right perspective.

BASIS FOR INCOME TAX ASSESSMENT.

IN the SUPPLEMENT to the issue of November 19th there appeared a note of an interview at Somerset House between one of the principal inspectors and two officials of the British Medical Association. It may, perhaps, be useful to add one or two comments. It is clear that the apprehension which had not unnaturally arisen as a result of the action of inspectors in different parts of the country was not based on official inspiration from Inland Revenue headquarters. Reference was made to the fact that the central office in Somerset House is not always able to secure uniformity throughout the country because the ultimate authority on such questions rests with the District Commissioners of Taxes. While this point has some theoretical importance, in practice the inspector is usually in a position to adopt any reasonable method of calculation likely to produce a fair result with a minimum of trouble to all concerned, and the district commissioners may be assumed to be very unlikely to take the initiative in

disturbing a practice which has worked satisfactorily for many years. It should be emphasized that the cash basis method is an approximation only, and that, while it is sufficiently close for most purposes, there are occasions when it breaks down, because the result which it gives does not fairly represent what, after all, is the real thing to be charged—that is, the income of the practice, whether realized in cash or standing on the books as good debts. This qualification applies mainly where there has been a change in the proprietorship of the practice, in which case the cash receipts of the successor do not adequately reflect the income he is earning. For this reason the cash basis is generally refused by the inspector during the first three or even five years of any particular proprietorship. That this point is not fully appreciated in the profession is shown by the fact that in such cases there is sometimes put forward the suggestion that the retiring practitioner should continue to pay tax on the cash receipts coming to hand after his retirement. Of course, such a specific arrangement *may* be an entirely reasonable ingredient in the whole of the terms for the transfer of the practice, but it is certainly not the logical sequence to an adoption of the cash-basis method. For example, the tax on an assessment based on the cash receipts of the three years 1918, 1919, and 1920 is paid in respect of the earnings of the year ending April 5th, 1922, and it is the person who is entitled to those earnings who should be assessed and pay the tax. The principal inspector naturally expressed a preference for a system which takes into account the increasing or decreasing value of debts on the practitioner's books. Where that value can be ascertained with reasonable accuracy it does undoubtedly introduce a closer approximation to the theoretically correct liability, but it may be doubted whether in the long run much difference would arise either way. During the war years practitioners adhered to the cash basis, though in many cases it then appeared to operate to their disadvantage; if the last two years have, through any increase in fees generally, supplied the converse case, the Revenue authorities may reasonably be expected to acquiesce in the continuance of a system which needs "the long run" to prove equitable.

THE VENTILATION OF PUBLIC HALLS.

DURING 1918 to 1920 complaints were made of the unsatisfactory ventilation of certain Johannesburg theatres and cinema halls, and the town engineers asked the medical officer of health, Dr. Charles Porter, to ascertain whether the amount of carbon dioxide gas in the atmosphere of these places transgressed the limit permitted by the Council's by-laws—namely, 12 parts per 10,000 of air at about 5 feet above the floor level. Dr. Porter replied that modern research had seriously discounted the value of the carbon dioxide test, and that suitable air-movement, temperature, and moisture were now accepted as the essential factors. To this there was a request for specification of "guiding principles," and later the Works Committee resolved that the medical officer of health should be asked to submit a report in this connexion. This has now been done, and the paper we have before us[1] gives a clear and succinct account of the gradual development of knowledge in the matter of ventilation up to the most recent work of Haldane and Leonard Hill. Working on these lines, the authors, Dr. Porter and Professor Cluver, proceeded to make a detailed investigation into the state of the atmosphere in a number of the city theatres and cinemas, and incidentally of the City Hall also. The results, which they tabulate, form a most complete and interesting record of what such an investigation should be. The various halls were visited during the performances, without any previous notice, and without disturbing the performance. Determinations were made on the several floors of the halls and also in the open air for comparison. They measured the cooling rate by means of Leonard Hill's dry and wet "kata-thermometer"; the readings of the ordinary wet and dry bulb temperature in degrees of Fahrenheit; the carbon dioxide content by means of Haldane's portable apparatus; the suspended dust on a few occasions; the feeling of comfort or otherwise experienced by the observers present, using Winslow's scale; and lastly, the degree of fullness of each house in terms of its seating capacity. Both European and native halls were investigated. From these investigations they conclude that, in South Africa at any rate, the carbon dioxide standard is entirely unsatisfactory as a test of efficient and comfortable ventilation. A further conclusion is that the New York standards for auditoria of relative humidity, temperature, and air movements require separate measurement, and are not so serviceable for that reason as Leonard Hill's "kata-thermometric" method whereby the combined effects of these can be accurately and easily gauged. For the Johannesburg theatres they find that a "dry-kata" figure of not less than five and a "wet-kata" of not less than sixteen indicate a reasonably good condition, and that of these records the "dry-kata" figure is, for sedentary gatherings, the more important. But in no case should the "dry-kata" figure be required to be higher than 1.5 below that obtained in the open air immediately outside the house; an important reservation in a climate where there are hot and sultry nights. They found that suspended dust was not excessive or deleterious; it consisted of skin débris, face powder, and fine silicious material. Their investigation of the cinema halls as regards the production of eye-strain was confined to a consideration of the 1919 report of the Committee of the London County Council and the Illuminating Engineering Society—a report which they found of great value. The halls passed the test very well, and it has been decided to recommend that the Municipal Building By-laws in regard to places of public amusement should be amended to embody, for application to new cinema halls, the requirements as to seating specified by the London Joint Committee.

[1] The Ventilation of Theatres and Cinema Halls in Johannesburg, and Cinema Eye-strain and its Prevention. By Charles Porter, M.D., M.O.H., and Eustace Cluver, M.A., M.B., Professor of Physiology, University College, Johannesburg. A Report to the Public Health and Works Committee of the Municipal Council of Johannesburg.

PHYSICAL INSTRUCTION IN SCHOOLS.

AT a meeting of the Medical Officers of Schools Association, on November 29th, the President, Mr. R. C. Elmslie, F.R.C.S., gave an address on the status of physical instruction in schools. Physical education was, in his view, one of the most important of the branches of preventive medicine. Very different conceptions of what constituted physical education were held among people engaged in educational work, but it might be defined as education in movement. To a large extent it was a natural process, starting immediately after birth, if not before. The earliest grasping movements of a baby were efforts to learn what he could do with his muscles and limbs. When he grasped an object he was co-ordinating his movements with vision. Presently he began to take notice of sounds, and, turning his head, co-ordinated his muscles with hearing. It was quite a mistake to suppose that an infant sat up as soon as he had sufficient strength in his back muscles; he sat up when he had attained a sufficient power of co-ordinating and controlling his movements to bring those muscles into action. It was not a question of strength, but of control. Since physical education was education in movement it was an education not of the muscles, but of the central nervous system. The muscular strength developed by physical education need not necessarily be great, but it must be properly balanced. The efficient physical instructor should have a knowledge of anatomy and physiology, as well as some acquaintance with the psychology of the young person at different ages. There were physically backward just as there were mentally backward children. Games were

most valuable if properly selected and taught, and should certainly not be taught only to those who were good at them. Physical instructors in elementary, secondary, and public schools should be as well paid as any other teacher. In the public schools he considered that physical instruction was at its worst. Too often they still relied upon the gymnasium sergeant, who was, as a rule, quite unfitted to deal with the scientific side. It would help greatly if there were a university degree in physical education, as there was in some countries, and any wealthy man who endowed a chair in this subject would be doing great service to the community. The medical profession also required education in this matter, and a course might well be set up in medical schools, while post-graduate courses for school medical officers would be an additional advantage. In the course of the discussion Dr. Lempriere, medical officer of the Haileybury College, said that it was true that the bulk of the public schools depended upon the old army gymnasium instructor, but such an instructor was now a highly trained person and bore no resemblance to the old drill instructor. Strength was a valuable asset to the English boy, and the pendulum had, he thought, swung too far in depreciation of mere muscle. The school medical officer was, of course, the proper person to supervise the instructor. Dr. E. Nash said that the average public schoolboy despised what he called "physical jerks," but the old-style drill sergeant would die very hard. At this meeting appropriate reference was made to the death of Sir George Evatt, who was practically the association's founder.

THE ROYAL SOCIETY.

THE 259th anniversary meeting of the Royal Society was celebrated on St. Andrew's Day, November 30th, when the President, Professor C. S. Sherrington, M.D., delivered the customary address reviewing the year's work. At the present time there was, he said, an element of considerable anxiety in the minds of those interested in the prosperity of science, for much of the reconstruction the country needed was being abandoned, and it was doubtful how science would fare. While the newer universities had shown admirable energy and had made their scientific laboratories places of research, the Universities Grants Committee had reported last February that universities could not meet their existing responsibilities or the legitimate demands upon them for the future; it was therefore a matter of grave concern that the Government grant to the universities was to be heavily cut down. In this country scientific research, taken broadly, depended for its main existence upon a combination of three chief groups: (1) Scientific and professional societies and some institutions entirely privately supported; (2) universities and colleges, with their scientific departments; (3) institutions directly subventioned by the State, such as the Medical Research Council, the Development Commission, and the Department of Scientific and Industrial Research. Though this triple system might seem a somewhat haphazard and inco-ordinate assembly, it was in reality an organization with much solidarity, and its co-ordination was becoming more assured. One of the strengths of this organization was that it interlocked with the educational system of the country. The cost of investigation was higher than it had been, but endowment funds went less far, and private benefactors were less and less capable of showing voluntary generosity. Withdrawal of the Government's financial support on any large scale must therefore at the present time be most seriously crippling. To pull down under emergency what had been built up through years of careful experience, and was proving efficient, could hardly, Professor Sherrington said, be ultimate economy. Were the financial provisions for research too severely cut down it would be impossible to continue various investigations now in progress, and there must be a reduction in the number of competent investigators, the number that made a fair volume of team work possible. Curtailment of the State aid—relatively small in this country—given to scientific research must harm the scientific production of the country. At the same time it had to be recognized that some curtailment seemed to be unavoidable, but research was an indispensable factor in the rebuilding of the national life and sacrifices should not be required from it disproportionately greater than from other services of an essential kind. Perhaps the best policy would be to avoid the extension of buildings, equipment, and personnel, maintaining broadly the *status quo* ready for expansion when that once more became feasible. Professor Sherrington was re-elected president. Among the members of Council elected were Sir Frederick Andrewes, Dr. H. H. Dale, Sir William Leishman, and Dr. J. T. Wilson, Professor of Anatomy in the University of Cambridge. The treasurer of the Society is Sir David Prain, C.M.G., C.I.E., M.B., director of the Royal Botanic Gardens, Kew.

CHORDOMA.

CHORDOMAS, or tumours derived from the relics of the primitive notochord, are rarely recognized, and from their histological structure are easily mistaken for myxochondromas or colloid carcinomas. The remains of the notochord may be visible in the intervertebral discs as pulpy masses composed of rather large, rounded or slightly oval, acidophil epithelial cells with vacuoles containing mucin. Growths of notochordal tissue are most common at the spheno-occipital synchondrosis, at the upper end of the notochord behind the pituitary body, and in the sacro-coccygeal region. Many so-called chordomas are small benign masses of this tissue forced out of the bone during early development, and may with probability be regarded as analogous to other examples of tissue displacement. Malignant chordomas, however, occur and are extremely fatal, for from the difficulty of diagnosis and their tendency to infiltrate the regional fasciae extensively, operation is rarely more than palliative. Dr. N. D. C. Lewis[1] has minutely analysed four American cases of malignant chordoma arising in the sacro-coccygeal region. The symptoms were rectal, and various diagnoses as to the nature of the growth were made. The duration of life after the onset of symptoms varied from four months to two years; three of the patients were operated upon. The case of shortest duration occurred in a lunatic. The author believes that these tumours are much more frequent than was formerly supposed, that they have sometimes been classified as other forms of malignant disease, and that they are of much more clinical importance than has hitherto been recognized.

PUBLIC HEALTH AND THE GENERAL PRACTITIONER.

IN the November number of *Public Health*, the official organ of the Society of Medical Officers of Health, is an article extremely to the point at the present time, by Dr. Charles E. S. Flemming, on "The Public Health Services in Relation to the General Practitioner." Dr. Flemming is of opinion that the development of the Public Health Service has been retarded by the want of association between the various departments of medicine. Preventive medicine has been separated from curative, and the various departments of curative medicine have worked independently of one another; their interdependence is neither recognized nor developed. The dissociation of various sections of medical practice is, he thinks, largely due on the one hand to the individuality of the medical practitioner, and on the other to the prevailing want of appreciation of the fact that the interest of the individual was the same as the interest of the community. When of recent years treatment by public authorities ceased to be restricted to infectious

[1] N. D. C. Lewis, *Arch. Int. Med.*, Chicago, 1921, xxviii, 431–452.

cases which the practitioner was glad to be rid of, and which it was obvious could not be properly left in their homes, but was extended to the treatment of school children, persons suffering from venereal disease and tuberculosis, and those attending maternity and child welfare clinics, then, says Dr. Flemming, the general practitioner became seriously alarmed, and irritated with, and suspicious of, not the medical officer, but the public health authority. Thanks to the tact of medical officers of health, the clinician's common sense, and the appreciation by both of the need of the community, both sides are now realizing that they are as essential the one to the other as are the navy and the army the one to the other—that they are the fighting force of the community in its battle for health. We may fairly say, he continues, that all medicine is in a sense preventive, and, admitting that, we admit that every practising medical man is, in fact, in the public health service. "How obvious," he says, "is the need for co-operation between the public health service and the family doctor; but can it be said that under the present arrangements the State gets the best and fullest value out of the general practitioner? Consider his knowledge of the history of disease in his individual patients, in their families, and in the community in which he practises; his acquaintance with his patients' surroundings at home and at work, their conditions of work, their conditions of life, their habits his experience of the manner in which and extent to which these things influence them in health, in disease, and under treatment. No official can ever have the same intimate knowledge of the life-history of the patient, the same opportunity to detect disease in its earliest stages, or—and this is even more important—the tendency to disease. Surely there must be some means by which this unlimited supply of invaluable information can be used in the interest of the community more effectively than it is at present." It is to be hoped that the significance of these remarks of an experienced general practitioner will be realized. The tendency of public health policy in certain quarters to-day was commented upon in a leading article in our issue of November 26th, p. 908. The general practitioner has no quarrel with the medical officer of health. He recognizes that, although sometimes he may not see eye to eye with regard to his methods, in every case he is working for the good of the community. What the general practitioner wishes to-day is in no case to break off relations with the medical officer of health, but to offer him his own experience—which can be gained only in the type of medical work in which he is engaged—to augment and support the advance of preventive medicine.

SEROLOGICAL STANDARDS.

A CONFERENCE upon serological problems, convened by the Health Committee of the League of Nations, will be held in London on Monday next, December 12th, and following days, under the presidency of Professor Madsen, Director of the State Serological Institute of Denmark, who is the president of that Committee. Distinguished workers from laboratories in the following countries will be present at the conference: Austria, Belgium, Denmark, France, Germany, Great Britain, Italy, Japan, Poland, and Switzerland. It is hoped that the President of the Office International d'Hygiène Publique and an American representative will also be present. The British delegates will be nominated by the Medical Research Council. The meetings will take place in the Ministry of Health. The conference will be occupied with a consideration of existing methods of standardizing serums and the possibilities of attaining an agreed international system of serological standards. It will also take account of the methods used in leading laboratories for the serum diagnosis of syphilis. Arrangements for such new investigations as may be necessary for the objects in view will be discussed.

A PROPOSED NATIONAL INSTITUTE OF INDUSTRIAL MICROBIOLOGY.

THE day has passed when we regarded bacteria as having been created for the annoyance of mankind. A wider acquaintance with them has revealed the fact that only an extremely small section of bacteria attempt to live as parasites on living beings. The vast majority unobtrusively pursue their varied activities and perform work which is essential to the continuance of plant and animal life on this planet. In recent years many successful attempts have been made to take advantage of the good offices of bacteria for the manufacture of substances useful to man. Chemical transformations laboriously accomplished in the laboratory or factory may be effected extremely rapidly by the bacterial cell. The importance of bacterial ferments is recognized in the dairy industry and by agriculturists, and, as is well known, micro-organisms are used for the manufacture of vinegar, citric acid, and alcohol. During the war acetone was manufactured by the agency of bacterial ferments. In an article appearing in *Nature*, December 1st, Mr. Chaston Chapman, F.R.S., appeals for the foundation of a "National Institute of Industrial Microbiology." He points out that if some central laboratory were established for the study of the applications of microbiology to industry the many independent researches at present being conducted in isolated institutions might be co-ordinated, with far-reaching benefits to industry. He suggests also that the proposed institute might become the home of a collection of pure cultures of organisms found useful for industrial purposes so that types could be preserved under expert supervision. Such a museum of micro-organisms of importance in medicine exists in the national collection of type cultures at the Lister Institute under the supervision of Dr. Ledingham. We understand that the scope of this collection has been extended to embrace organisms found to be responsible for diseases of plants. In appealing for the study of the applications of microbiology to industry Mr. Chapman very wisely draws the attention of the public to a branch of science possessed of almost unlimited possibilities.

THIRD INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.

THE third International Congress of the History of Medicine will be held in London, under the presidency of Sir Norman Moore, from July 17th to July 22nd, 1922. Meetings will be held at the Royal Society of Medicine, the Royal College of Physicians, the Royal College of Surgeons and the Wellcome Historical Museum, where there will be an exhibition of objects connected with the history of medicine, surgery, and the allied sciences, including manuscripts, early printed books, pictures, sculptures and engravings, old surgical instruments, medals, etc. The subjects suggested for discussion by the International Society of the History of Medicine are: (1) The principal seats of epidemic and endemic disease in the middle ages, including plague, gangrenous ergotism, leprosy and malaria. (2) The history of anatomy. Further information may be obtained from the General Secretary, Dr. J. D. Rolleston, 21, Alexandra Mansions, King's Road, London, S.W.3.

CLAYDEN v. WOOD-HILL.

IN addition to the letters published last week, we have received others urging the British Medical Association to support an appeal against the verdict in the case of Clayden *v.* Wood-Hill, of which a report appeared in our issue of November 26th at p. 919. As the matter is under the consideration of the Medico-Political Committee, it has been deemed inadvisable to publish these letters.

England and Wales.

THE WELSH NATIONAL MEDICAL SCHOOL.

THE Welsh National School of Medicine is making an appeal for subscriptions to a fund of £100,000 for the endowment and further equipment of the school, which has been at work since the beginning of this winter session. This must be raised before August next in order to qualify the school for the Treasury grant of £5,000 a year, which will be paid only if the school succeeds in raising by public subscriptions an annual income of that amount or a capital sum which will yield it. The Premier has signed the following appeal, which has the support of the Pro-Chancellor and the Vice-Chancellor of the University of Wales. Mr. Gwilym Hughes is acting as organizing secretary, and cheques payable to the Welsh National School of Medicine Appeal Fund, and crossed Barclay's Bank, Queen Street, Cardiff, should be sent to him at the National School of Medicine, Newport Road, Cardiff, or to the Pro-Chancellor, Lord Kenyon, or the Vice-Chancellor, Dr. A. H. Trow.

The Appeal.

The Welsh National School of Medicine, established in connexion with the University of South Wales and Monmouthshire, was opened last October. It has two great aims set before it: (1) To realize the intention of its promoters, from Viriamu Jones in 1886 to its latest benefactors, that it should be a national institution in fact as well as in name; and (2) to carry on its work on what is known as the hospital unit system, whereby university training and research in the medical sciences are brought into the closest relation with the clinical work of the hospital. To enable the school to give a complete training in all branches of medicine and surgery on this system will, after the first year or two, require a yearly expenditure of at least £25,000, to meet which the grants available from public sources and fees will be quite inadequate. If success is to be assured it is necessary to raise a further sum of £100,000. By the generosity of Sir William James Thomas, Bt., the late Miss Talbot, and Major David Davies and the Misses Davies a new physiological block and a department of public health have been or are being built, and chairs of preventive medicine and tuberculosis have been founded. Further expenditure on equipment in the shape of laboratories and apparatus is absolutely necessary, and an endowment fund is required to provide the full complement of professors, lecturers, and trained staff which the unit system requires.

The King Edward VII Hospital at Cardiff have placed all their beds at the disposal of the school for tuition purposes, and nothing except money is now needed to make this one of the foremost schools of medicine in the country. Welsh students, who at present have done preliminary training at the University College of South Wales and Monmouthshire, have had to pursue their further training for the final degrees at University College (London), Edinburgh, Liverpool, or elsewhere. It is confidently hoped that this will no longer be necessary, and we therefore appeal to Wales to endow and equip a national school of their own, without which neither their ideal of autonomy in education nor their other schemes for the advancement of public health in Wales can be fully realized.

D. LLOYD GEORGE.

BRISTOL MEDICAL SCHOOL.

The annual dinner of the Bristol Medical School was held on November 28th, with Mr. W. R. Ackland in the chair. A large number of past and present students attended, as well as representatives of the university and medical men practising in Bristol and the neighbourhood. The guest of the evening was Sir Henry Gray, K.B.E., C.B., C.M.G., of Aberdeen, who in his speech proposing the health and prosperity of the medical school, expressed his pleasure at meeting again so many men with whom he had been associated in his surgical work in France. He urged the present generation of students not to demand too much spoon feeding in their medical education, but rather to cultivate the spirit of independent observation and a capacity for doing things for themselves. The chairman, in his response, welcomed Sir Henry Gray, and reminded him that Aberdeen had laid Bristol under a deep obligation when it sent Greig Smith to become surgeon to the Bristol Royal Infirmary. The memory of Greig Smith would form a lasting bond of union between the two schools.

The Long Fox Memorial Lecture was delivered in the Physiological Lecture Theatre of the University on November 28th by Mr. Hey Groves, on the subject of "The repair of bone injuries." The chair was taken by Sir Henry Gray of Aberdeen. After referring to prehistoric examples of the treatment of fractures, the lecturer gave a demonstration of certain general principles relating to the experimental repair of bone injuries by means of metal plates, intramedullary pegs, and traction appliances. Some of the experimental evidence relating to the practical details of bone-grafting was then given. Emphasis was laid on the fact that success in bone-grafting required that a graft should be of ample size, and that it should be firmly fixed and have wide contact with the host bone. The clinical application of these principles was then demonstrated in relation to a number of patients recently treated by bone-grafting methods.

CENTRAL MIDWIVES BOARD.

The Central Midwives Board for England and Wales met on November 17th, the Chairman, Sir Francis Champneys, presiding. Both the penal and the ordinary monthly meetings were held. At the former, one midwife was struck off the roll and two other cases were put under probation for reports in three and six months. With reference to the training of pupil midwives in Guernsey, the Board expressed itself as prepared to consider favourably a suitable scheme for such training and for the inspection of the same, and invited Sir Edward and Lady Ozanne to submit a scheme.

The Director of the Division of Nursing, Public Health Department, New Zealand, desired to know the terms on which midwives trained in New Zealand and registered under the New Zealand Act, after passing the State examination, may be accepted for registration in England under Section 10 of the Midwives Act, 1918. It was decided to reply: That in the opinion of the Board the standard of midwifery training in New Zealand is not equivalent to the standard adopted by the Board, inasmuch as it is not essential: (1) That all pupils shall attend a course of at least twenty lectures delivered by a registered medical practitioner; (2) that the course of lectures shall extend over a period corresponding with the period required by the Board; (3) that the medical practitioner who delivers the course of lectures shall be approved by the midwifery authority. The Board will be glad to hear that the standard of training in these respects, in New Zealand, can be brought up to the standard required by the Board and also to hear that in the event of reciprocal arrangements as to registration being entered into, the New Zealand authorities will recognize the certificate of the Board obtained by passing the Board's examination, without regard as to whether the training of the holder is institutional or private.

The Medical Secretary of the British Medical Association had written to inform the Board that exception had been taken by the members of the Association to midwives administering opium, except under the direction of a medical man, and that he had been instructed to bring the matter before the Board and the Minister of Health. He also stated that the Association was of opinion that pituitrin was, without doubt, a drug which should not be used except under the supervision of a medical man, and asked for the Board's observations on the use of the drugs mentioned. It was decided to reply that the Board had always declined to schedule drugs except so far as stated in Rule E.19. In its experience of nearly nineteen years, it had never had a case before it in which a midwife had been found to have administered a drug improperly.

VITAL STATISTICS OF ENGLAND AND WALES.

According to the last quarterly report of the Registrar-General for England and Wales, marriages and births in this country both continue to decrease in number. The number of persons married during the second quarter of 1921 showed a decrease of 9,392 from the preceding quarter, and was 74,745 less than in the second quarter of 1920; it corresponds to an annual rate of 15.1 per 1,000 of the population. The births registered in the third quarter of 1921 were 10,466 fewer than in the preceding quarter, and 15,017 fewer than in the third quarter of 1920; the 214,850 births registered during the quarter correspond to an annual rate of 22.5 per 1,000 of the population. The births of males numbered 110,056, and those of females 104,794. There were 9,898 illegitimate births during the quarter, or 751 less than in the corresponding period of 1920. The natural increase of population in England and Wales last quarter, by excess of births over deaths, was 115,716, against 54,265, 86,220, and 136,177 in the third

quarter of 1918, 1919, and 1920. The deaths registered in England and Wales in this period were 9,337 fewer than than in the preceding quarter, but were 5,444 more than the third quarter of 1920. The total deaths, 99,134, correspond to an annual rate of 10.4 per 1,000 of the population. Influenza was stated to be either a primary or contributory cause of death in 528 cases, or 0.5 per cent. of the total deaths registered in the quarter. The infant mortality, measured by the proportion of deaths under 1 year of age to registered births, was equal to 83 per 1,000, which was 15 per 1,000 below the average in the corresponding quarter of the ten preceding years.

Scotland.

EDINBURGH CHAIR OF MIDWIFERY.

AT a meeting of the Curators of the University of Edinburgh, held on November 29th, it was reported that the University Court desired that the teaching of gynaecology should be combined with the duties of the Chair of Midwifery. In view of this intimation the Curators adjourned their meeting until December 16th to consider names of gentlemen qualified to hold the appointment. It is understood that the combined salary under the new arrangement will be £1,200, and that the professor may undertake practice.

HEALTH INSTRUCTION.

On November 24th Sir Napier Burnett, honorary president of Glasgow University Medico-Chirurgical Society, delivered his presidential address in the Students' Union, on the subject of "The Doctor as a teacher or instructor of health." He advocated greater education in the way of preventive medicine. The doctor of to-day relied too much on the apostolic injunction that "the whole need not a physician, but those who are sick," but to-day that doctrine should be modified to the effect that the "whole" need the physician of health, and the "sick" the physician of disease. Sir Napier Burnett pointed to the fact that formerly, unless in the case of clubs and societies, practitioners derived their income from people who consulted them in sickness; under the Insurance Act they now depended for the greater part of their income on people who remained well. He appealed, first, to students to seek to equip themselves with the knowledge necessary for them to be efficient teachers of the principles of health. In the second place, he appealed to the Council of the British Medical Association that, just as they had so successfully defended the interests of the profession on many occasions, so they should likewise take up a constructive and forward policy in this matter of the prevention of disease. For example, the wide field of industrial hygiene had scarcely been touched in this country, and immense results might be secured through a forward policy inaugurated by the British Medical Association in a campaign for the attention of employers to the doctrine that the health of the workers meant wealth not only to the employee but also to the employer. And, third, he advocated that a short course of lectures on what might be termed social medicine, or advanced hygiene, might be instituted in medical schools, to be taken by the student either before or immediately after qualification.

Ireland.

TUBERCULOSIS IN BELFAST.

IN the annual report which he has recently issued as chief tuberculosis officer for Belfast, Dr. Andrew Trimble says that further opportunities for observation of patients who claimed that their tuberculosis began as an attack of influenza leads him to affirm again that as a provocative of tuberculosis influenza has proved less potent than was apprehended. He agrees with Fishberg that many of the physical signs found in the lungs after an attack of influenza simulate to a remarkable degree the signs of pulmonary tuberculosis. The constitutional symptoms also are very like those of tuberculosis—namely, lack of energy and loss of appetite, sometimes lasting for weeks and months. The admission, however, that the "lighting-up" disease was classical influenza must be guarded against carefully, though it may really have been the preliminary fever which often heralds the onset of tuberculosis. One of the things which struck Dr. Trimble forcibly in the course of examinations both of civilian and military patients was the large number who seemed to be suffering, or to have suffered, from the hilus form of pulmonary tuberculosis. In some cases where the disease seemed to have been confined to the hilus few signs were found, but manifest symptoms were reported. In others the disease had travelled towards the periphery, manifesting itself in pleurisy and fibrosis, while *x*-ray examination demonstrated a good deal of bronchial infiltration. Amongst these cases was found a large majority of chronically progressive, retrogressive, or apparently arrested disease. It would seem, he says, a reasonable hypothesis that the disease in a great many cases begins as a hilus infection in childhood, and by the time adolescence is reached the activities of physical growth seem to release the tubercle bacilli hitherto held imprisoned in the hilus and allow them to escape towards the periphery of the lungs. In these cases one must not be deceived by not finding the usual physical signs of tuberculosis in the lungs; the signs are rather to be sought, he agrees with Riviere, in the narrowing of the resonant area above the apices, and in the demonstration of the condition by *x* rays.

ULSTER MEDICAL SOCIETY.

The third meeting of the Ulster Medical Society was held in the Medical Institute, Belfast, on December 1st; the president, Dr. Robert Hall, occupied the chair. Dr. J. C. Rankin introduced a discussion on the value of the Wassermann reaction in the diagnosis and treatment of syphilis. As officer in charge of the venereal department in the Royal Victoria Hospital, Belfast, he emphasized the importance of medical men becoming acquainted with the later methods of diagnosis and treatment, and said that it was not the intention of the authorities to confine the treatment of syphilis to clinics and experts; students were not sufficiently instructed. He then gave the result of his experience in cases of syphilis without the Hunterian chancre, Colles's law, dosage, etc. Dr. J. A. Smyth, assistant in the laboratory of the hospital, gave a demonstration of the three methods—Harrison's, Fleming's, and Dreyer's—and pointed out the difficulties, fallacies, and the necessity for the greatest manipulative care; the latter was a quantitative test. Dr. T. Houston, director of the laboratories, referred with appreciation to the work of his assistants, past and present—Drs. Norman Graham, George Rea, J. A. Smyth, and Boyd Campbell. He explained an advance that Dr. Rea had made in the testing of blood for transfusion. The Wassermann reaction had now become so accurate that it had survived all the stringent tests to which it had been put, and where two tests were employed and all doubtful results retested, the percentage of error fell to 1 per cent. A large number of slides were shown, giving the results of the laboratory work and dealing with doubtful and disputed points. He leant strongly to the view that cases without any clinical symptoms but with a positive Wassermann should be treated; such cases often ended in heart disease and nerve trouble. He had made over 5,000 tests, but reserved comparison till he had a sufficient number of Dreyer's. Where both Harrison's and Fleming's were positive there was little doubt. Observations were made and questions asked by Drs. MacIlwaine, Boyd Campbell, Calwell McKisack, and W. W. D. Thomson; and Dr. Houston replied.

New South Wales.

ROYAL PRINCE ALFRED HOSPITAL.

THE report of the Royal Prince Alfred Hospital for the past year shows that the number of patients treated reached the total of 8,000—a number larger than that recorded in any other general hospital in Australia. The number of attendances in the out-patient and casualty departments was 91,200, the individual number of patients being 35,556. Like nearly all other hospitals all over the world, this institution is faced with a heavy deficit in its finances in consequence of the increased demands upon its

accommodation and upon its resources in every direction, of the high rate of wages to be paid to the employees under the basic wage, and the high price of food, drugs, and surgical appliances and dressings. The financial position at the end of the year was actually £8,000 worse than at the end of the previous year, and the deficit was only kept as low as it was by utilizing all bequests and legacies as income instead of investing them as capital. As it is, the Government contributes very largely towards the support of the hospital by means of a large bed subsidy and by special donations, and it is obvious that unless the general public subscribe much more largely in the future than in the past the hospital must become more and more dependent upon the Government for financial support. The urgent need for an isolation block has been impressed upon the board for a number of years past, but there is no possibility of its being erected in the near future. The Government has recognized the necessity for this building, but the shortage of money is said to be the cause of the delay in its erection. An important addition to the hospital work is the establishment of a dental clinic, under the guidance of Professor Fairfax Reading, Professor of Dentistry in the University, with the assistance of two honorary dental surgeons. Owing to the importance now attached to the hygiene of the mouth, the work of the dental clinic will be specially directed to this subject.

RED CROSS AND WAR CHEST HOME FOR BOYS.

The committees of the New South Wales Red Cross Society and of the War Chest are co-operating in an important movement to provide for the orphans and neglected children of ex-soldiers of the Australian Expeditionary Force. The War Chest has contributed £3,500 towards these homes, and it is intended to establish one home for boys to contain twenty-five beds and another for girls to provide for the same number. A house has already been purchased in a healthy part of Sydney, and it is intended to convert this into a home for boys. It is hoped that at an early date another house will be purchased at Randwick as a home for girls. It has been ascertained that there are quite a large number of children of ex-soldiers in New South Wales who are either orphans or are living under very undesirable conditions, and it is considered an urgent matter to rescue these children from their environment and place them under such conditions as will conduce to their becoming useful citizens. A representative committee has been formed to supervise the working of these homes; an experienced matron will be put in charge, and the ladies of the committee will be responsible for a large amount of visiting. Provision will also be made for the religious and secular education of the children.

Correspondence.

THE SUSSEX PROVIDENT SCHEME.

SIR,—In view of the fact that some doubts have been expressed as to the economic soundness and financial stability of the Sussex Provident Scheme, it may interest some of your readers to hear the results of the first eleven months' working.

It was decided to make the first financial year one of eleven months in order that the associated hospitals might receive what was owing to them before the last quarter day of the current year. The financial arrangement which was agreed to when the scheme was initiated was that for the first year the income of the scheme should be divided into forty parts, and that these should be allotted beforehand to the associated hospitals, in a varying proportion, based upon the work which each might be expected to do. This was, of course, a purely experimental arrangement and subject to being changed in the light of the first year's experience, but the results which have been attained will be of value in the future whether the scheme maintains its existence or not.

One satisfactory result is that, although some hospitals have been favoured more than others, they have all been paid in full for the cost of the services which they have rendered to the members of the scheme during the year; but beyond this 100 per cent. the percentage of payment to the cost of the work done varies very considerably.

One hospital which, so far as can be ascertained, has not been called upon for any service to the members of the scheme, has been paid one-twentieth of the total income, and of the others the percentage varies from 105 at the Brighton, Hove, and Preston Dispensary to 307 at the Sussex Throat and Ear Hospital. At the New Sussex Hospital for Women and Children and the Stephen Ralli Memorial Laboratory it reaches 168, while at the Royal Sussex County Hospital it amounts to 117.5.

The Dental Hospital has been paid at the rate of 15s. 4d. a visit. The visiting consultants have been paid a fee of £3 3s. for each consultation, while one-eighth of the total income still remains in hand.

The percentage of members who are recorded as having received in-patient treatment during the eleven months is 2.083, and the percentage of those recorded as having received out-patient treatment (including dental, massage, and *x*-ray case) is 8.5.

Although no definite conclusion can be drawn from these figures they are suggestive and encouraging. The number of members of the scheme is still small and for a large proportion of them the services will be available without further payment during part of next year. On the other hand, as the scheme is becoming more generally known, the number of new members joining every month is showing a steady increase, and if this should continue there cannot be a doubt that the success of this year will be repeated and increased in the future.—I am, etc.,

SELBY,
Honorary Secretary, Sussex Provident Scheme for Hospital and Specialized Medical Services.

Brighton, Dec. 5th.

AMBROISE PARÉ.

SIR,—Your issue of December 3rd, in a review of Packard's *Life and Times of Ambroise Paré*, contains some interesting observations by W. G. S. which are in some respects, I think, unjust to Paré.

Was it indeed, as W. G. S. says, a retrograde procedure to write in the vernacular? No doubt the same was said of the pioneer Galileo when he began to lecture in Italian, as it was certainly said of another Paduan, Mercurio, when he wrote his *Comare* in the vernacular. Mercurio replied that he wrote in a language which could be read by those for whom it was intended, and the same reply might have been made by Paré, writing of surgery and obstetrics, which were then largely in the hands of barbers and midwives.

"As to his midwifery," writes W. G. S., "Philumenos and Soranos had described podalic version on the living child; Paré only referred, with Celsus, to podalic version for the extraction of a dead foetus." There is some doubt, according to Farbender, whether Philumenos described podalic version of the living child; there is no doubt at all that Paré did so. His chapter describing the operation is headed: "La manière de tirer les enfants hors le vêtre de la mère, tant morts qui vivâns." He gives a detailed technique of the operation, including the soft loop for the foot "made of ribbon with which women bind their hair, or such like," and warns of the precautions to be taken in version with twins lest the lives of the mother and children should be lost.

W. G. S. suggests that it was a fault that Paré believed that the pelvic bones separated. Well! he had seen it, and "seeing's believing"; also that he opposed Caesarean section, at a time when (and for nearly three centuries afterwards) the operation was almost uniformly fatal.

In midwifery the great and indisputable merit of Paré is that, though perhaps not the first to mention the operation, he introduced and described podalic version for the delivery of the living child after the operation had been neglected for about fourteen centuries.—I am, etc.,

London, W., Dec. 5th. HERBERT R. SPENCER.

PERFORATION OF THE NASAL SEPTUM IN COCAINE TAKERS.

SIR,—It seems to me that Dr. F. G. Crookshank's letter in the issue of the BRITISH MEDICAL JOURNAL of November 26th, p. 917, may create a wrong impression as to the relative frequency with which cocaine, used as a snuff or spray, produces perforation of the nasal septum.

As I read it, the main suggestion of his letter is that when one meets with a clean cut, button-hole perforation of the septal cartilage we should not forget that such a

lesion is often produced by the local application of cocaine. This seems to be his meaning when he says:

"Abroad the diagnostic importance of the nasal perforation is perhaps better appreciated than, so far as I can find, is the case in London."

My own experience would suggest that there are many other factors which account for the majority of these perforations, and possibly the most frequent of all of them is slow ulceration caused by the irritation of dust collecting on a "spur," "crest," or other irregularity of the cartilaginous septum. When the little ulcer happens to be on the area which corresponds to the usual site of bleeding in epistaxis, its destructive influence will be at its maximum.

The irritation caused by the ulceration often induces "nose-picking" or violent rubbing of the nose, and by such means a crust is removed, which provides a fresh surface for further irritation, and ultimately the typical perforation is produced. *Such irritation may lead to the cocaine habit.* The septal perforation is well known amongst workers in the irritating and dust-laden atmospheres of stone-masonry, and it is peculiarly liable to attack the employees in chromic acid factories and salt mines.

Rhinologists often observe the perforation of the septal cartilage in chronic tuberculous lesions of the nose, while a smaller number of cases is met with after enteric fever, and in such debilitating diseases as diabetes.

Jonathan Hutchinson was the first to point out that the simple button-hole, smooth-bordered perforation was not necessarily of syphilitic origin. The former is limited to the cartilage, while the specific lesion frequently destroys the adjacent bony elements of the septum and the hard palate, so that a large and irregular perforation is produced.

I am in entire agreement with the timely diagnostic warning conveyed in Dr. Crookshank's letter, but venture to suggest that if inexperienced readers concentrate too fully on the cocaine factor in such cases, a good deal of unfounded suspicion and trouble may be caused thereby.—I am, etc.,

London, W., Nov. 26th. HERBERT TILLEY, F.R.C.S.

SIR,—Dr. Crookshank, in your issue of November 26th, p. 917, raises the question of nasal septum perforation and its diagnostic importance in cocaine takers.

As nose specialists see this condition frequently in their out-patient clinics, in people from the poorest walks of life and industrial occupations, who never had access to cocaine, its presence in takers of this drug must be regarded as a coincidence and not in the relationship of cause and effect.

For many years septal perforations were considered diagnostic of syphilis, and patients who had them were labelled and treated accordingly, until Jonathan Hutchinson opposed the view and pointed out that two types existed—that is, the syphilitic and non-syphilitic. The latter is much more common than the former, and is due to simple inflammatory causes, and it is to be hoped that the possessor of such a harmless nasal affection, having already been rescued from one unmerited diagnostic reproach, is not going to have a fresh stigma cast upon him by our medical friends from abroad.—I am, etc.,

London, W., Nov. 26th. JOHN F. O'MALLEY.

AN OIL-IMMERSED *X*-RAY TUBE FOR INTENSIVE THERAPY.

SIR,—The introduction from Erlangen of intensive methods of radiotherapy—referred to in a note in the BRITISH MEDICAL JOURNAL of December 3rd—has brought the question of suitable apparatus very much to the fore in this country. For the purpose of carrying out the Erlangen technique it is necessary to excite a tube at a potential of 200,000 to 230,000 volts for some hours on end. Much attention has been given to the apparatus for generating the necessary current, and the therapeutic dose has been carefully worked out. Less care appears to have been bestowed upon certain subsidiary but still important matters.

These are: risk of tube breakage with injury to patient; risk of spark jumping to patient; efficient "boxing in" of the tube so that stray radiations do not reach the room; optimum running conditions, securing longest possible life for tube.

I believe that these desirable ends can best be secured by immersing the *x*-ray bulb in oil contained in a tank lined with thick lead. A suitable tank, filled with oil, weighs about 500 lb., and is therefore non-adjustable, unless by very elaborate machinery comparable with that which works a passenger lift. The alternative is to make the tank stationary and to move the patient. At my request Messrs. Schall and Son have constructed such a tank. It is 4 ft. long, weighs with oil just under 500 lb., and is mounted on a massive wooden table built to stand a load of 15 cwt. The lead lining of the tank is pierced by several zinc windows, which are covered by lead "blinds" when not in use. Adjustable tubular diaphragms permit of cones of radiation being obtained at various angles. The patient lies on a special couch capable of horizontal and vertical adjustment. No bare wires are used. The current is conveyed partly by thick brass rods, partly by heavily insulated cables, and enters the top of the tank through insulated rods 16 in. long by 1½ in. in diameter. Hence there is no "brushing," with its bad effects upon the air of the room.

The stand and tank may be touched at any point without any sensation being discerned. Even a hysterical patient cannot harm herself or the apparatus. If the tube should break, the parts fall harmlessly to the bottom of the tank; the oil, of course, being non-inflammable. But the tube is unlikely to break, because the glass can never get hot, and no spark can jump to the bulb, piercing it, because of the oil. Neither is the tube subjected to any of the jars which assail it when mounted in an ordinary movable stand. The tube employed by the present writer is a new model Coolidge, 31 in. long and 8 in. in diameter. But a gas tube with a hollow target stem down which the oil could travel might equally well be used. I should be happy to furnish details and plans to anyone interested. A considerable amount of the work could be carried out locally by an intelligent combination of joiner and plumber. The lid of the tank, with its insulated rods and tube supports, also the adjustable tubular diaphragms, call for expert handling.—I am, etc.,

London, W.1, Dec. 3rd. F. HERNAMAN-JOHNSON, M.D.

SUICIDE IN BORDERLAND CASES.

SIR,—It was with great appreciation from the practical side of neurology and psychiatry that I read Professor G. M. Robertson's opening paper to the Section of Neurology and Psychiatry, at Newcastle-on-Tyne, in July, 1921 (printed in the JOURNAL of November 19th, p. 827). To all those medical men who have had the care of a large number of borderland cases during a period of years, his words must recall many incidents where precautions taken to guard against suicides were not adequate.

The difficulties one personally experiences arrange themselves into four classes:

1. The inability of the patient to afford special nurses.
2. Isolation of the cases, with special nurses and attendants, from other patients who are not similarly afflicted.
3. Being overruled by the patient's strong objection to having a guard over him.
4. Last, but not least, the fear on the part of the physician of taking drastic action and so precipitating the very calamity which he is trying to guard against.

There are many other minor difficulties, and possibly the most marked of these is to induce relatives to impart full details concerning the history of the patient, and when a patient is under treatment to refrain from writing or visiting.

Personal experience has shown the early morning to be the most critical time. Perhaps after a restless two or three hours he has been able to get a little natural sleep and so temporarily forget his troubles, and for the first few minutes after waking he is fairly free, and then with a rush there comes back to him the dreadful reality of his position and utter helplessness and hopelessness. He then becomes mentally panicked, all sense of right or wrong seems lost, and he is temporarily not responsible for his actions; unless well attended, this is the time that he will make the attempt to bring his miserable existence to an end.

The earlier such cases are treated the more rapid the success, and the younger the patient the sooner does he

recover. Experience shows that every five years of age makes a slight difference to the period of recovery. It is better if one can get patients direct from their homes and without any attempt having previously been made to treat the illness. Frequently repeated failures, owing perhaps to want of proper understanding of the condition, render the treatment very difficult and the prognosis decidedly worse.

When a case is first seen the difficulty in diagnosis is so often complicated by the above-mentioned withholding of facts on the part of the relatives, and it is always better to take the most guarded views rather than listen to the mild history that is given.

When interviewing relatives regarding a patient who is unable to concentrate his mind at the time he is seen, and therefore cannot give any connected story of his own, I have found it satisfactory to request the relatives to give me the very worst possible impression they can of the case. It is difficult for the doctor who has been attending the patient in his own home to be fully aware of the patient's worst behaviour, for the reason that he is unable to be present more than a few minutes at a time, and that during such few minutes the patient will generally pull himself together and present the best possible front.

As an illustration of the above difficulty I would quote the case of a Dr. "A." I had under my care some years ago:

He was admitted to a private home suffering from mild melancholia without any definite delusions, but with very definite exaggeration of facts. These facts were some minor family difficulties which dated back four and a half years. Owing to strain of work and having to deal with these family difficulties at the same time, his last support—namely, sleep—had given way, and he was forced to seek advice and treatment. At that time I was not fully aware how necessary it was to follow out Professor Robertson's advice, and this patient was allowed to occupy a room without a night nurse. He made some slight progress in the first fortnight, but as he did not show sufficient signs of improvement his relatives were again questioned as to his family history. The information they gave was that the family history was absolutely satisfactory. This patient cut his throat in the early hours of the morning three weeks after his admission, and I was called in about 7.30 a.m. to find the patient dead. His relatives subsequently informed me that his father and his brother had both committed suicide.

The point one wishes to illustrate in the above case is that it is better never to trust to the information given by relatives, but to rely entirely on one's own judgement. After the case quoted above I make it a rule never, under any condition whatsoever, to take the slightest risk of a repetition. There is no doubt that early diagnosis and early treatment is the ideal. The history of most of the cases prior to the war generally dated back from one year up to five years.

Having a case under treatment early, the risk of suicide is not so great. One is dealing with a patient who still has a good reserve of self-control, and his outlook is not so hopeless. In other words, the patient himself feels that, given proper conditions, there is a good hope of his recovery. On the other hand, patients whose history dates back two or three years have fewer powers of recuperation. They have exhausted many remedies in their effort to recover, and the whole aspect of the case is more difficult from the physician's point of view.

I feel that Professor G. M. Robertson's statement—

"Were I asked to deliver one lecture and one only on psychiatry, that lecture would be on melancholia and its treatment. Were my audience to forget all I said, with the exception of the one statement that practically every patient suffering from melancholia is a potential suicide at one stage of his illness or another, then my lecture would not have been given in vain."

—is the true interpretation of the feelings of every physician who has had the care of patients so afflicted.—I am, etc.,

Oulton, nr. Leeds, Nov. 25th. P. G. PHILLIPS.

ANTE-NATAL TREATMENT OF CONGENITAL SYPHILIS.

SIR,—Dr. Leonard Findlay, in his paper in your issue of November 26th, concludes that four or five intravenous injections of neo-salvarsan *plus* mercurial inunction suffice to ensure, probably, destruction of all spirochaetes in the uterine tissues, and, certainly, a succession of two, three, or four non-syphilitic children.

No doubt Dr. Findlay would nowadays advocate a more extensive course of neo-salvarsan, though his results, as far as they go, could hardly be better; but it is obvious that sufficient time has not elapsed for one to be certain: (1) That these apparently healthy children will not yet develop symptoms of lues tarda; (2) that subsequent offspring will be free from infection.

Results similar to Dr. Findlay's were possible in the old days of mercury and potassium iodide, but a much longer course of treatment was necessary; in which connexion the following case-history is of interest:

Mrs. A. had four pregnancies, all miscarriages; husband admitted previous syphilis. Mrs. A. was then subjected to a course of oral administration of mercury and potassium iodide extending over two years, in the middle of which her fifth pregnancy occurred. Since then she has had no treatment, but all the subsequent pregnancies have resulted in live children born at full time. The fifth child is now aged 18; no signs nor history of syphilis; Wassermann reaction negative in 1921. The sixth is now aged 15; no signs nor history of syphilis; Wassermann reaction negative in 1921. The seventh died when 10 months old of bronchopneumonia. The eighth died within twelve hours of birth. The ninth, now aged 10, healthy until keratitis developed at the age of 8; Wassermann reaction strongly positive in 1921. Mrs. A. is now apparently well, but the Wassermann reaction is now weakly positive.

It is to be hoped that in cases treated with neo-salvarsan a similar reappearance of syphilis in later progeny and, presumably, a return of the spirochaetes to the uterine tissues, do not occur.—I am, etc.,

Glasgow, Nov. 26th. ROBERT FORGAN.

VENEREAL CLINICS: A LAY POINT OF VIEW.

SIR,—I find it difficult to see how either the profession or the world at large is benefited by the letter of "Venerealee," published in your issue of November 26th. Everyone knows that there are those who, as he says, are "as regular in their illicit sexual intercourse as they are in their football and cricket," and who profess, with your correspondent, not to "consider it immoral." All this we know just as we know that others do not think it immoral to indulge in other pursuits so consonant with human nature as the defrauding of their mothers or the robbing of poor-boxes. Everyone equally knows that these supermen, who regard themselves as above the laws governing us ordinary individuals, are going to do these things whether they regard them as immoral or not, for the very simple reason that they like them. And again, everyone knows that civilization cannot be run on the lines that each shall do exactly what he likes at all times irrespective of anyone else.

As I say, I see no particular reason why you have permitted "Venerealee" to air his superior views in your pages; but if you thought otherwise, surely it would have been wise to add an editorial suggestion that he should deign to consider the welfare of others at least during the more acute phases of his venereal attacks.

He states that he is condemned by public opinion. That is so; hence he remains anonymous. But he complains that he is condemned for his malady, not for his conduct. That is nonsense. Does the public ostracize ill health? Why does he write, "We do not go to our family doctors—we prefer to attend a stranger"? Patients do not seek a strange doctor or attend a secret clinic when they suffer from, say, haemorrhoids. Clearly he is condemned for his conduct, which society stigmatizes as immoral. And he may be doubly condemned for his philosophy, with its exaltation of his own opinion and its lofty disregard for the tradition of civilized society or the welfare of his fellow creatures.—I am, etc.,

London, W., Nov. 28th. REGINALD MILLER.

SIR,—That the "majority of young men in suburban London" are as bad as they are painted by your correspondent I simply do not believe, but that those of his acquaintance may be is possible. Let me say to them through him that if they could realize the sorrow and suffering caused to innocent women and children through their "normal enjoyment to which they are entitled," they would at least refrain from marriage. It is the least they can do for their country if they cannot be continent. That many of them "go through the tortures of the damned" I am glad to hear. If they have a spark of manhood in them let them see to it that they have no wives to go through the same. To my mind your correspondent is just as much a social outcast whether he had escaped venereal disease or not. But as he admits that to

address him from the moral aspect is waste of time, let me assure him from a social aspect (and he appears to be sensitive about social outcasts) that he is *a*social.

The public is led to believe that syphilis is curable. Many of these so-called cures, with a negative Wassermann reaction, infect their wives and have children, who show signs of congenital defect, such as being below weight markedly at birth, below the normal birth length, immature, having abnormal ossification of the skull, wasting, etc. These children are weaklings, unable to resist disease, and though they may show no definite symptoms of syphilis succumb to the first wind that blows. Many of them die of pneumonia, fits, rickets, etc. Only by their histories does one know them to be specific.

Only yesterday a poor woman told me her husband "played Hamlet" when she contracted syphilis on his return from France, as he said he was cured in the army and she must have been infected elsewhere. She had herself since then had two years' treatment and was afraid to go back for further treatment when she had a recurrence. for fear of upsetting him again.—I am, etc.,

Leeds, Nov. 26th. MARION E. MACKENZIE.

⁂ We have received several other letters to the same effect.

ON THE OPERATION OF PROSTATECTOMY.

SIR,—Everyone must have noticed the storm which Freyer's death has raised as to priority in the enucleation of the prostate. Some of it pays a compliment to Freyer after the fashion of "Lady Candour" in *The School for Scandal;* most of it implies that Freyer was not straight in his claims, and all of it is unsavoury at this hour. "There is nothing new under the sun." Ideas are as plentiful as blackberries, but few of them come to anything. Americans would be amused if we asserted that their citizens—the Wrights—pirated their ideas about aeroplanes from the *Mahabharata*, which describes the use of aeroplanes in the great Indian war!

I knew Freyer, and I doubt if many of the writers would have tackled him if he were alive, as he was a sharp controversialist. Freyer was a big man who will live as one of the landmarks of surgery. He was quite a big enough man to do prostatic enucleation on his own initiative. I am confident that he was not a walking encyclopaedia, and that there were many of the "kings of Israel," such as Fuller, McGill, etc., whom he knew not. His school in India before he went to London was his hospital, where he had plenty of material of all kinds. Such men are far too busy with their interesting material to become walking encyclopaedias.

There is no doubt in the mind of the average commonsense surgeon that Freyer's work established the enucleation of the enlarged prostate for all time. We are not convinced that without Freyer the enucleation of the prostate would have been more advanced to-day than it was fifty years ago.

Freyer was an honest man. Freyer was a courageous man. His name will stand out in the history of the surgery of the prostate as the towers of Palmyra stand out in a wilderness.—I am, etc.,

HENRY SMITH, C.I.E.,
London, S.W., Nov. 18th. Lieut.-Colonel I.M.S.

"STIMULANTS."

SIR,—In a paper by Dr. Harry Campbell on "The blood and the nervous diathesis," published in the BRITISH MEDICAL JOURNAL of November 19th, the following words occur:

"Mankind all the world over shows a liking for stimulants in one form or another. . . . When the blood is well provided with nerve stimulants and not overcharged with nerve depressants, there is no craving for extraneous *stimulants, such as alcohol*, tea, or coffee."

No popular fallacy is harder to kill than the fallacy that alcohol is a stimulant, and it will perhaps be centuries before it is exorcised from the mind of the general public. But at least one might expect that it would not be perpetuated in a scientific address before the British Medical Association by a physician of high standing. In that most lucid review, entitled "Alcohol, its action on the human organism," which was issued by the Advisory Committee appointed by the Central Control Board (Liquor Traffic) to investigate the physiological action of alcohol, it is clearly proved that alcohol is a narcotic and *not* a stimulant. The *apparent* stimulation is shown to be accounted for "by exciting influences of the environment," in the presence of diminished control of the intellect and the will over the emotions, this blunting of the highest centres being the first effect of alcohol on the nervous system. If alcohol is taken when all such exciting influences are absent—as, for instance, in the privacy of one's room—no such period of apparent stimulation is observed. Under such conditions its true effect as a narcotic and depressant of the nervous system becomes manifest. It is, perhaps, hardly necessary to add that the present writer is not concerned with anti-alcohol propaganda, but simply with the question of the real nature of the action of alcohol on the human organism.—I am, etc.,

Alderley Edge, Cheshire, Nov. 22nd. E. WEATHERHEAD.

OPIUM SMOKING.

SIR,—It is with considerable surprise that I read Professor Dixon's remark with reference to opium smoking of "the comparative ease with which this habit is cured." I have had to deal with many opium smokers in the East, and in no case did the miserable patient's attitude appeal to me as one of "comparative ease"; on the contrary, more often than not the patient was in such agony of craving for his smoke, that he escaped the watchful supervision of his nurses and went back to his vice.

In Formosa, where I worked for several years, all opium smokers must have a licence from the Japanese Government. If a man reforms his habit, it is very difficult for him to induce the police to receive back his ticket, for they know from experience the comparative ease with which the late drug-addict reverts to his former habit.—I am, etc.,

G. GUSHUE-TAYLOR, M.B., B.S., F.R.C.S.
London, E., Nov. 21st.

SPINAL ANAESTHESIA FOR URGENCY OPERATIONS IN THE AGED.

SIR,—I was very interested in the paper by Mr. Southam, of Manchester Royal Infirmary, in your issue of October 15th, as it confirmed what I had already suspected when I was home on leave last year, that spinal anaesthesia was not so generally popular as a routine as it deserves.

In 1911 I wrote a short note to the *Lancet* (October 21st) giving the statistics of operations performed at Kasr-el-Aini Hospital, the Cairo School of Medicine, and I should be interested to know if there is any hospital in England that can now compare with those statistics in the realms of spinal anaesthesia.

Mr. Southam describes an admirable technique, and if he made it the rule instead of the exception to give stovaine I am sure he would be delighted with its advantages. Without going into complicated statistics, I may briefly say that out of 404 major operations performed this year 146 of these have been under stovaine anaesthesia, and I have had no complications.

I would therefore emphasize the advantages of spinal anaesthesia not only "for urgency operations in the aged," but for all operations below the belt on young or old, man or woman.—I am, etc.,

H. E. S. STIVEN, M.D.

Egyptian Government Hospital,
Port Said, Nov. 19th.

TREATMENT IN TUBERCULOUS DISEASE OF BONES AND JOINTS.

SIR,—In his splendid paper opening the discussion on this subject (JOURNAL, November 26th, p. 877) Sir Henry Gauvain, when speaking of local treatment, mentions the therapeutic injection of Beck's paste into sinuses.' I tried this some time ago and was very disappointed with the results. I then tried bipp with a similar result. Later I used a paste mentioned by F. Calot. It contains:

Camphorated naphthol	6 parts
Camphorated phenol	6 ,,
Iodoform	20 ,,
Creosote	8 ,,
Crystallized guaiacol	7 ,,
Lanoline	50 ,,
Spermaceti	50 ,,

This paste must be prepared under aseptic conditions. It is solid at body temperature, but becomes liquid at 104.5° F., and is injected in this state and retained with

swabs until solid. The injections are repeated every fifth day until the last sinus heals. If a sinus persists after three months of such treatment the process is discontinued for the next three months; during this time the sinus often closes; if not, the injections are restarted. In the treatment of tuberculous sinuses free from gross secondary infection I have had distinctly encouraging results with this paste, combined with immobilization of the diseased part and judicious use of heliotherapy.

Bipp and Beck's paste appeared to be treated as foreign bodies by the tissues, but this paste was not, perhaps because it has an animal fat as its base, while the base of bipp and Beck's paste is of mineral origin.—I am, etc.,

Margate, Nov. 28th. STUART ROBERTSON.

THE FIRST OVARIOTOMIST.

SIR,—Dr. Finlayson Fleming's statement (November 19th, p. 866) regarding Dr. Robert Houston of Glasgow, who performed ovariotomy successfully in the year 1701, is accurate. In the second edition of my *Manual of Gynaecology* I drew attention to Houston's case.

In addition, it is not generally known that Houston almost had the distinction of being the first surgeon to operate on a case of extrauterine pregnancy. The patient refused operation and carried the extrauterine foetus for four and a half years. The literature dealing with the cases referred to above is mentioned by Dr. Fleming in his communication.—I am, etc.,

Glasgow, Nov. 21st. SAMUEL J. CAMERON.

SIR,—I notice in your issue of November 19th that Dr. J. F. Fleming is the latest of the many able supporters of Houston of Glasgow as "the first ovariotomist"; but surely it is rather late in the day to seek to bring the honours (I had almost said "the ashes") once more back over the water from the Kentucky home of McDowell.

Houston, in his own title of his own report on the operation, only claims to have cured by *a large incision* made in the left side of the abdomen.

The facts of the case cannot be more clearly or concisely stated than they are by the late Greig Smith in his *Abdominal Surgery*, vol. i, p. 177, fifth edition. He writes:

> "It is right to say that Tait, who had made special inquiries into the subject (*Dis. of Ovaries*, 1883, p. 239), claims for Houston the honour of having been the first ovariotomist. Now an ovariotomy is not complete unless the tumour is removed and the pedicle secured. In Houston's account of his case there is not a suggestion he did either. It seems to me scarcely credible that a surgeon who could describe, as minutely as Houston did, the somewhat trivial expedient adopted for removing the glairy fluid should leave unmentioned the far more important proceeding of removing the tumour and dividing and securing the pedicle. 'I then squeezed out all I could (of the contents) and stitched up the wound in three places.' If between the squeezing and the stitching the grand measures of removing the tumour and securing its pedicle really did occur, I think he must have at least mentioned them. Houston says the tumour was of the left ovary, but the only proof he adduces in support of this is that it lay on the left side. The after-history of the case is in no way inconsistent with his having incised an ovarian growth."

—I am, etc.,

Stafford, Nov. 20th C. M. MITCHELL.

MEDICAL EDUCATION.

SIR,—The baronets and knights have had their say on medical education, but in these days of medical politics may it be permitted to a commoner to tender some criticism?

Two and a half years are too long before the possibility of a student entering the wards for clinical work. An M.D. who had experience of partners and assistants once assured me he preferred the Conjoint man, on the ground that he was more practical; he said the early years spent by the London University man on theory "ruined" him. Sir Sydney Russell Wells's contributions, as always, were statesmanlike; but of Sir Arthur Chance and Dr. Caton I would ask, Can it be proved in life that the hare is better than the tortoise?

Dr. Macdonald remarks that "the way men were sent out to practise midwifery was a disgrace." Why, most of them have never applied the forceps! But it is not limited to midwifery. The surgeons monopolize the major and minor operations, and unless the student has held a house-surgeon appointment his opportunities are few. I heard once of an F.R.C.S. who had never done an operation on the living subject. And is there anything more pitiable than a recently qualified man turning up in the practitioner's surgery for the first time, where two-thirds of his cases will be medical?

I notice the majority of the speakers are still obsessed with examinations. It is a relief to see St. Bartholomew's Hospital has appointed Mr. McAdam Eccles to the new chair of clinical applied anatomy. In conclusion, may I quote the late Samuel Gee on the London University? "For fifty years it has been an examining university; for another fifty years it may be a teaching university; perhaps at the end of that time it will become a learning university." But Gee was the good physician — a Humanist.—I am, etc.,

Willesden Green, N.W., Dec. 5th. RICHARD GILLBARD.

WHITE BREAD DYSPEPSIA.

SIR,—Since midsummer I have seen twelve cases of severe dyspepsia caused by white bread. At first they appeared singly and at intervals, and their cause was not recognized; later on, when they turned up in crops of two or three at a time, it became less difficult to trace them to their source. None of the patients found out for themselves that white bread was responsible for their illness. Some of them thought little of their indigestion, and were under the impression that their hearts, nerves, or brains were going wrong. The secondary disturbances distressed them much more than the stomach disorder.

The dyspepsia itself and its attendant symptoms have been of such severity as seriously to alarm the patients and, while the condition lasted, to impair their capacity for work. All suffered more or less pain or discomfort in the region of the stomach, increased after meals with which white bread was taken. Some had sharp pain in the oesophagus in swallowing or at the cardiac end of the stomach. Flatulence was a prominent complaint in all the cases.

The pains, which started in the stomach, radiated in all directions, some round the left lower ribs to the back and others upwards behind the sternum to the throat and nose and to the back of the shoulders and down the arms. Tenderness over the epigastrium was very common; it extended frequently over the lower part of the left side of the chest. In one case the tenderness was on the right side over the liver, and was much increased on exertion. One patient stated that the pain in the stomach was continuous night and day and made sleep impossible. A few described the pain as very severe and alarming. Sickness was not present in any case, and the appetite was not much affected; a few were afraid to eat on account of the pain set up by food. Dryness of the mouth and throat in the morning was complained of in a few cases.

Several patients thought they were suffering from heart disease. In two the pulse rate was 140. Another was roused at night by violent palpitation, and suffered from shortness of breath on exertion, and giddiness. Another had two peculiar attacks after breakfast—he felt as if all power over the voluntary muscles had gone. Two patients considered they had gastric ulcer, and dieted themselves strictly, but in each case without improvement, as they continued to eat white bread in the form of toast.

Several of the men stated that they had to make great efforts to keep at their work, as they soon got exhausted. There was pronounced depression in all the cases. Almost all complained of insufficient sleep, and some of loss of memory, irritability, and diminished power of concentration. As many men as women were affected, but not a case was seen among children.

The patients' digestion returned to normal within a week after one of the finer kinds of wholemeal bread was substituted for the ordinary white bread in their dietary, and the mental, nervous, and cardiac symptoms then disappeared. It is probable that white bread is responsible for much of the slighter forms of dyspepsia and for many obscure cases of neurasthenia.—I am, etc.,

London, N., Oct. 4th. SIMON FRASER, M.B.

SCIENCE IN RUSSIA.

An Appeal to British Scientists and Physicians.

SIR,—I know that many of you have acquaintances and even friends among Russian scientists. Christmas is approaching, which Russian scientists will once more keep in hunger and cold in a régime of unprecedented slavery and terrorism. Remember your friends and acquaintances, and send them your Christmas greeting. Your sympathy will support them in the hardest time that Russian science has ever had to endure, because in Russia, as elsewhere, science dies when deprived of liberty.

The American Relief Administration (67, Eaton Square, London, S.W.1) receives contributions in money, and, from its famine relief stores in Russia, will guarantee to deliver a parcel of foodstuffs to any person designated, and will forward a receipt from the latter.

If anyone finds a difficulty in selecting a particular Russian scientist, the parcel may be addressed simply to the Rector of the University of the city in question, or to the President of the Military Medical Academy at Petrograd, or the Academy of Sciences, for distribution among the scientists of the respective institution.

If necessary, I can furnish information as to the whereabouts of a number of Russian scientists remaining in Russia.—I am, etc.,

V. KORENCHEVSKY,
Formerly Professor of the Military Medical Academy.
Lister Institute of Preventive Medicine,
Chelsea, S.W.1, Nov. 28th.

Obituary.

W. H. IRVIN SELLERS, M.B., C.M.EDIN., J.P.,
Honorary Surgeon, Preston Royal Infirmary.

WE regret to record the death of Dr. Irvin Sellers of Preston, which occurred suddenly on November 12th, at the age of 64 years. Dr. Sellers was educated at the Preston Grammar School, and subsequently spent some time at Leipzig and Lille, proceeding for his medical studies to the University of Edinburgh. He graduated M.B., C.M.Edin. in 1880 and obtained the diploma of M.R.C.S.Eng. in 1881. After qualifying he occupied the post of house-surgeon at the Royal Southern Hospital, Liverpool, and subsequently was a resident assistant at the Coombe Maternity Hospital, Dublin. He commenced practice in Preston in 1885, in partnership with the late Dr. Arminson, and soon established himself as a reliable and valued practitioner. He was later appointed to the staff of the Preston and County of Lancaster Royal Infirmary, and at the time of his death was one of the senior surgeons of that institution. He took a great interest in ambulance work and was for many years head of the Preston division. During the war he organized and dispatched numerous units for service in the R.A.M.C., besides serving as surgeon to the Moor Park Voluntary Hospital. His duties in this respect entailed a good deal of night work, and there is no doubt that his labours for the soldiers was a contributory cause to the heart affection to which he succumbed.

He was an old member of the British Medical Association and was the first Representative to the Representative Body from Preston; he also served as honorary secretary of the Division for three years and afterwards as chairman, which post he held at the time of his death. He was very devoted to the welfare of the profession, and in his capacity of secretary and president of the Preston Medico-Ethical Society he contributed largely to the establishment and maintenance of the friendly spirit which is a marked feature of medical life in the town. When the Preston Insurance Committee was formed in 1912 Dr. Sellers became a member and remained on the committee till it was reconstituted in September last. At one time he was vice-chairman of the committee and for many years was chairman of the Local Panel Committee. He served also on the Preston Corporation joint committee on tuberculosis.

Dr. Irvin Sellers was a man of high ideals up to which he consistently lived, and the respect and affection with which he was regarded were testified to by the extraordinary demonstration on the occasion of his funeral. Christ Church, in which the funeral service was held, was crowded by people of all ranks in life, and the adjacent thoroughfares were lined by people anxious to pay him a last tribute.

THE death took place on November 24th, at the age of 49, of Dr. HERBERT E. CORBIN, M.O.H. for the County Borough of Stockport. He received his medical education at St. Mary's Hospital, London, where he gained the senior university scholarship and was appointed senior demonstrator in physiology. He graduated B.Sc.Lond. in 1897 and took the diplomas of M.R.C.S. and L.R.C.P. in 1903 and the D.P.H. in 1905. After holding the appointments of house-physician to St. Mary's Hospital and to the Bethlem Royal Hospital, and clinical assistant at the East London Hospital for Children, Shadwell, he became assistant medical officer and bacteriologist to the Croydon Borough Hospital and the Croydon and Wimbledon Joint Small-pox Hospital; later, he was assistant M.O.H. Willesden Urban District Council, and medical superintendent at the London Fever Hospital. He was appointed M.O.H. of Stockport in 1908. During investigations which he conducted he was successful in tracing the infection of certain cases of small-pox to imported cotton. He was joint author of Corbin and Stewart's popular *Handbook of Physics and Chemistry*, of which the fifth edition was published last year. Dr. Corbin's health was seriously affected by war service. For some time before the war he had been medical officer of the Manchester Artillery; he was mobilized on the eve of the declaration of war, and appointed specialist sanitary officer of the 66th East Lancashire Division. In 1916 he went to Mesopotamia in command of a field ambulance, with the rank of lieutenant-colonel. He took part in the advance, and from 1917 to 1918 was military medical officer of health of the city of Baghdad, whence he was invalided home. He was demobilized in December, 1918, and at once returned to his duties as M.O.H. for Stockport. He was president of the Stockport Medical Society in 1913–14, and in the social life of the district he was a very popular figure. An able administrator, Dr. Corbin's relations with the medical profession, with officials, and with the public were of the most cordial, and his early death is greatly regretted. He leaves a widow and two sons.

DR. WILLIAM LAING CULLEN of St. Boswells died suddenly on November 22nd. He was born in the West Highlands in 1861, and graduated M.B., C.M. in the University of Edinburgh in 1884. A few years later he settled in St. Boswells, and soon became identified with the life of the Roxburghshire town, taking both a part and an interest in its affairs. He was parochial medical officer for St. Boswells, Maxton, Merton, and Bowden. He had a large private practice, and in 1912 he became a Fellow of the Edinburgh Obstetrical Society. He was the author of an article on "Pregnancy in a bicornuous uterus," which was published in the BRITISH MEDICAL JOURNAL in 1889. For many years Dr. Cullen was one of the most active members of the South-Eastern Counties Division, British Medical Association, of which in 1906 he was an exemplary chairman. He took a keen interest in politics, both general and medical, and on the National Insurance Act coming into operation he was elected chairman of the Roxburghshire Panel and Local Medical Committees, and was appointed a representative on the county Insurance Committee. Perhaps the last important public duty he was able to perform was to attend the Annual Meeting at Newcastle as Representative of his Division. Dr. Cullen was an able public speaker, and his services could always be depended on in aid of any good cause. During the war he was much overworked, giving unstinted help to neighbours on service, and he himself served for a period as surgeon to a hospital at Dunkirk. He was also president of the local Volunteer Training Corps, and used his great influence with much effect to stimulate recruiting over a wide area. As a practitioner he was extremely conscientious, and while his bonhomie and kindly manner rendered him universally popular, his unfailing devotion to his patients' interests and his skill made him a trusted and valued friend in every emergency.

WE regret to announce the death, on November 13th, of THOMAS MCGEOCH, M.D.Glasg., D.P.H.Edin. and Glasg., M.O.H. and Parochial Medical Officer of Girvan, Ayrshire. He became suddenly ill, and died in a few hours, while visiting a friend. Dr. McGeoch was born fifty-six years ago in the parish of Colmonell, Ayrshire, at Barbae, a

small estate which had belonged to his forbears for over a century. He graduated M.B., C.M. at Glasgow University at the age of 21, and became assistant to Dr. Millar of Wishaw. A few years later he started on his own account at Girvan, where he built up a large practice and made for himself a wide circle of friends. In spite of his busy life his studious disposition was not to be suppressed, and he graduated M.D.Glasg. in 1910, and two years later gained his D.P.H.; later he was appointed medical officer of health of the burgh. Dr. McGeoch was professionally a very sound man, courteous, considerate, and peculiarly unostentatious. He was also a sportsman, being a good shot, a keen angler, a golfer, and a bowling champion. In addition to holding several public appointments in the district he was a past president of the Ayrshire Division of the British Medical Association. At a Branch Council meeting, held on November 16th in Glasgow, a resolution was passed instructing the secretary to convey an expression of sympathy to his widow.

WE regret to announce the death of Dr. DAVID LIVINGSTONE DAVIES of Criccieth, which took place suddenly on November 11th in his 57th year. Dr. Davies received his medical education at Owens College, Manchester, and qualified with the diplomas of M.R.C.S., L.R.C.P. in 1891. He was formerly assistant medical officer at the Borough Asylum, Nottingham, and had been in practice at Criccieth for some thirty years. He took a large share in the life of the district, was lecturer to the Red Cross Society and St. John Ambulance Association, and medical officer to a number of public bodies. He was a J.P. for the county of Carnarvon. Dr. Davies took much interest in the work of the British Medical Association; he was a former chairman of the South Carnarvon and Merioneth Division, and at the time of his death was a member of the Council of the North Wales Branch. He was the contributor of a number of articles to this and other medical journals. He was widely respected as a practitioner, and had for many years been medical attendant to the Prime Minister and his family.

THE death is announced of Dr. CLAUDE PHILIP LE QUESNE, which took place at Southampton on November 18th, as a result of cellulitis, by which he was attacked in the exercise of his professional duties. He was educated at St. Bartholomew's Hospital, and took the diplomas of M.R.C.S.Eng. and L.R.C.P.Lond. in 1890. He was a member of the Southampton Division of the Southern Branch of the British Medical Association, and had filled several offices in the Division. He was a man of wide sympathies, with all the attributes that distinguish the successful general practitioner, and he was as popular with his profession as with his patients. He leaves a widow and one son, who have received widespread sympathy.

WE regret to record the death of Dr. WILLIAM HERBERT SMART, which took place on November 5th. Dr. Smart was the only son of the late Sir William Smart, K.C.B., M.D., R.N., and was educated at Blundell's School, Caius College, Cambridge, and St. Thomas's Hospital. He obtained the diploma of M.R.C.S.Eng. in 1885 and graduated M.B.Cantab. in 1886. After holding resident appointments at the Royal Hants County Hospital and the East London Hospital for Children, Dr. Smart went into general practice at Polesworth, Warwickshire, where he remained for over thirty years, holding the appointment of medical officer of the Polesworth district of the Atherstone Union. An accurate clinical observer, possessing a charming personality and kindly manner, his death has cast a gloom over the whole district in which he worked. He leaves a widow and one son, a member of the medical profession.

DR. ALFRED TEMPLE PERKINS died recently at Wellington, New Zealand, at the age of 63. After studying medicine at Guy's Hospital, he qualified with the diplomas of M.R.C.S.Eng. and L.R.C.P.Edin. in 1882. He went out to New Zealand in 1886. He was for some time a member of the honorary staff of Wellington Hospital, and throughout his professional career he was a well-known member of the New Zealand Branch of the British Medical Association.

DR. JAMES DAVIDSON WYNESS, of Aberdeen, died on November 24th at the age of 76. He was a native of Inverurie and graduated M.B., C.M.Aberd. in 1872 and M.D. in 1874. After graduating he commenced practice in Schoolhill, Aberdeen, but afterwards removed to Union Street and later to West Craibstone, where he had a large practice, which he only disposed of a week previous to his death. He was a member of the Aberdeen Division of the Aberdeen Branch of the British Medical Association. He was twice married, and is survived by a daughter, his only child, who resided with him.

THE death took place, in his 52nd year, of Dr. RUPERT WHEATLEY, at Torquay on November 14th, after a short illness. Dr. Wheatley received his medical and dental education at the Middlesex Hospital and the Dental Hospital, and took the diplomas of L.D.S.R.C.S.Eng. in 1893, and M.R.C.S. and L.R.C.P. in 1895. In the latter year he commenced practice as a dental surgeon in Torquay, where he was very successful. Unfortunately ill-health obliged him to retire in 1912. He is survived by his widow and one son.

THE death is announced of Dr. DWIGHT H. MURRAY, of Syracuse, New York, at the age of 60. He was a Fellow of the American College of Surgeons, a well known proctologist, and Speaker of the House of Delegates of the American Medical Association.

Universities and Colleges.

UNIVERSITY OF OXFORD.

AT a congregation held on December 1st the degree of Doctor of Medicine was conferred upon W. H. Butcher, St. John's.

UNIVERSITY OF CAMBRIDGE.

THE State Medicine Syndicate has appointed Dr. G. S. Graham-Smith, Dr. G. H. Orton, and Dr. S. Melville to be members of the Committee on Medical Radiology and Electrology for a period of three years. The Syndicate has also appointed Dr. L. E. Shore, Dr. C. S. Myers, F.R.S., and Sir German Sims Woodhead to be members of the Managing Committee for the Diploma in Psychological Medicine for the same period.

Dr. Graham-Smith, Mr. G. E. Wherry, and Mr. F. W. Dootson have been appointed members of the Special Board for Medicine until the end of next year. The following have been elected by representatives of departments to serve on the Board for the same period: Mr. G. Stead, Dr. T. S. Hele, Dr. H. Hartridge, Mr. S. M. Wadham, Dr. Louis Cobbett, and Mr. Arthur Cooke.

An election to a research studentship for the degree of Ph.D. will be made at Trinity College in July next and in every subsequent year.

At a Congregation held on December 3rd the following medical degrees were conferred:

M.D.—C. J. Stocker.
M.B., B.CH.—F. P. N. Parsons, R. S. Scott, G. W. Theobald.
M.B.—J. M. Higginton, R. B. P. Lansdown, G. P. N. Richardson.

UNIVERSITY OF LONDON.

A COURSE of post-graduate lectures (supplemented by a course of clinical instruction) on mental deficiency has been arranged by the University of London Extension Board in co-operation with the Central Association for the Care of the Mentally Defective. The course is intended for medical practitioners and will be of two weeks' duration, from June 12th to June 24th, 1922. The fee is five guineas, with a registration fee of one guinea; intending students are asked to make early application. Full particulars may be had from Miss Evelyn Fox, University of London, Imperial Institute Road, South Kensington, S.W.7.

Sir Cooper Perry has been reappointed one of the representatives of the University on the Central Council of the Federated Superannuation System.

It has been decided to hold the ceremony of Presentation Day in 1922 in the Royal Albert Hall.

Sir Wilmot Herringham and Sir William Willcox have been appointed respectively chairman of the Graham Legacy Committee and of the Physiological Laboratory Committee.

Five lectures on recent researches on the biology of bacteria will be given at the Royal College of Surgeons, Lincoln's Inn Fields, W.C., by Mr. F. W. Twort, Superintendent of the Brown Animal Sanatory Institution, on December 12th, 13th, 15th, 19th, and 20th, at 4 p.m. Admission is free without ticket.

Professor A. E. Boycott, F.R.S., has been reappointed Director of the Graham Medical Research Laboratory for one year from January 1st, 1922.

UNIVERSITY OF DURHAM.

ON the nomination of the Senate the following appointments have been made by the Chancellor, the Earl of Durham, for the years 1922-23: Vice-Chancellor, Dr. Arthur Robinson, Professor of Logic and Psychology. Pro-Vice-Chancellors, Mr. J. S. G. Pemberton, formerly M.P. for Sunderland; Dr. David Drummond, Professor of Medicine; and Sir Theodore Morison, Chairman of the Council of Armstrong College.

UNIVERSITY OF LIVERPOOL.

THE University Court has appointed Dr. Richard Caton, C.B.E., M.D., Emeritus Professor of Physiology, to be one of the two Pro-Chancellors of the University in succession to the late Dr. J. W. Alsop.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

AT the last business meeting of the College, held on December 2nd, the President admitted to the Licences in Medicine and Midwifery the following candidates who had passed the Conjoint Final Examination of the Royal Colleges of Physicians and Surgeons:

E. S. Becker, E. J. Benson, W. H. Browne, J. F. Cleary, J. J. Clune, A. Doran, W. C. Dwyer, J. F. Enright, M. W. Frazer, J. J. Fitzsimons, J. MacF. Gray, M. P. P. Higgins, C. S. Hillis, J. H. Lawlor, Matilda G. Neill, R. H. Nightingale, J. O'Leary, G. S. Rutherford, T. G. Whitcroft.

The following have passed the Conjoint Examination for the D.P.H.:

V. J. Glover, H. L. Mooney, J. A. Musgrave.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

SURGERY.—†H. Amin, *†J. L. Delicati, *†E. D. Foster, *†J. S. Lewis, †J. A. Marriott.

MEDICINE.—*A. G. L. Brown, †S. Cohney, *†W. E. F. Davidson, *M. T. A. Elnakeeb, *R. Erskine-Gray, *†E. D. Foster, *†S. A. Hayes, †R. Henein, †M. Hilmy Eid, †C. F. Long, †D. Menzies, †A. Mishriky, †S. Sedaros, *†L. Spira, *R. S. Thomas.

FORENSIC MEDICINE.—A. G. L. Brown, M. T. A. Elnakeeb, E. D. Foster, R. Henein, C. F. Long, C. Martiny, L. Spira, H. M. White.

MIDWIFERY.—J. I. Cahill, A. G. L. Davidson, M. T. A. Elnakeeb, E. D. Foster, A. Mishriky, C. A. Nicholl.

* Section I. † Section II.

The Diploma of the Society has been granted to Messrs. W. E. F. Davidson, J. L. Delicati, E. D. Foster, R. Henein, M. Hilmy Eid, C. F. Long, and D. Menzies.

The Services.

HEALTH OF THE ARMY IN 1914.

THE Director-General's Report on the health of the troops at home and abroad for the first seven months of 1914 has now at long last been published.* It is submitted to the Secretary of the War Office by the present D.G., Lieut.-General Sir James Goodwin, K.C.B., who during the period under review held the rank of Major. He explains in his introductory letter that the war has delayed the preparation of the report and that for the same reason the tables on the medical examination of recruits have had to be omitted because complete returns from the various recruiting centres could not be obtained. In the circumstances it is inevitable that there should be an air of ancient history about this report and its wealth of statistical tables. It is divided in the customary manner into a number of main sections dealing, respectively, with the health of the troops serving in the United Kingdom, those serving in India, those serving at other stations abroad, and those serving on board ship.

SOUTH AFRICAN WOUNDED SOLDIERS.

THE last of the South African soldiers who were wounded in the great war will shortly be repatriated, and, in view of this, the High Commissioner for the Union of South Africa, at the request of his Government, has addressed to the Army Council an appreciation of the skill, care, and attention accorded to all such soldiers in auxiliary and other hospitals in the United Kingdom since the outbreak of the great war. As most of the hospitals have now been closed and their staffs dispersed, the Army Council makes public announcement of this appreciation in the hope that it will be brought to the notice of all concerned.

In acknowledging the letter of the High Commissioner, the Army Council has taken occasion to convey to the South African Government, through the High Commissioner, an expression of its gratitude for the care and attention bestowed on sick and wounded British troops while in hospital in South Africa.

DEATHS IN THE SERVICES.

Surgeon-General Sir William Deane Wilson, K.C.M.G., Army Medical Service (retired), died at Westfield, Sussex, on October 19th, aged 78. He was educated at Trinity College, Dublin, where he graduated M.B. in 1866; he took the L.R.C.S.I. in the following year and entered the Army Medical Department as assistant surgeon on October 1st, 1867; he served in the 107th Foot in the old regimental days. He attained the rank of surgeon-colonel on July 18th, 1894, and surgeon-general on October 3rd, 1898, retiring on January 1st, 1904. He had a long list of war service—Afghanistan, 1878-80, medal; Egypt, 1882, medal and Khedive's bronze star; Sudan, 1884, battles of Teb and Tamai, mentioned in dispatches in *London Gazette* of May 6th, 1884, two clasps, and specially promoted to rank of lieutenant-colonel; South Africa, 1899-1902, as principal medical officer, advance on Kimberley, operations in the Transvaal, Orange River Colony, and Cape Colony, mentioned in dispatches in the *London Gazette* of February 8th and April 16th, 1901, and of July 9th, 1902, Queen's medal with three clasps, King's medal with two clasps, and K.C.M.G. He subsequently received a Good Service Pension in 1907.

* *Report on the Health of the Army for the Year 1914.* Vol. lvi. 1921. London: To be purchased through any bookseller or directly from H.M. Stationery Office. 10s. net.

Medical News.

THE Council of Epsom College will shortly be awarding "France" pensions of £30 a year to medical men not under 55 years of age whose income, independently of any allowance from the College, does not exceed £100 a year. Forms of application can be obtained from the secretary, 49, Bedford Square, London, W.C.1.

A MEETING of the North-Western Tuberculosis Society will be held at the Public Health Laboratory, York Place, Manchester, on Thursday, December 15th, at 3 p.m., when Dr. Arthur Sellers will read a paper on "Complement fixation tests in the diagnosis of tuberculous infections." Medical practitioners interested in tuberculosis are invited to attend.

AT the meeting of the Zoological Society of London on November 22nd, Dr. A. Smith Woodward, F.R.S., exhibited the human skull and other remains from Broken Hill, North Rhodesia, upon which he had founded the species *Homo rhodesiensis*. In comparing the Rhodesian skull with a Neanderthal skull from La Chapelle, Dr. Smith Woodward stated that the former may prove to be next grade after Neanderthal in the ascending series.

THE second annual dinner and dance arranged by the Panel Committee for the County of London will be held at the Holborn Restaurant on Thursday, December 15th, at 7 o'clock. Tickets, price 21s. for gentlemen and 15s. for ladies (exclusive of wine), may be obtained from the Secretary of the Committee, Dr. R. J. Farman, Staple House, Chancery Lane, W.C.2. All medical practitioners, whether on the panel or not, will be welcomed.

ON November 20th a special service was held at St. Werburgh's Church, Derby, when a memorial tablet to the men of the 2/1st North Midland Field Ambulance R.A.M.C.(T.F.), who gave their lives in the great war, was unveiled by Major-General Sir Richard Luce, K.C.M.G., C.B., F.R.C.S. On the memorial, which is a handsome marble tablet, appears the crest of the R.A.M.C., the title of the unit, and the names of twenty-nine men.

THE annual dinner of the London (Royal Free Hospital) School of Medicine for Women was held on Friday, December 2nd, at the Connaught Rooms. The chair was taken by Mr. James Berry, consulting surgeon to the hospital, who was supported by a large company. The Chairman, in proposing the toast of "The Hospital and School," gave a short review of the year's work, referring particularly to the gynaecological and obstetrical unit recently established with Dr. Louise McIlroy as its director. Mr. Berry referred also with satisfaction to the linking up of the school with St. Mary's other hospitals and with the St. Pancras Infirmary in order that the students might have larger opportunities for gaining clinical experience. He regretted the loss of two features in the work of the hospital—the weekly consultations and the annual exhibition of museum specimens. The health of the visitors and guests was proposed by Dr. Haldin Davis, who mentioned in particular the presence of Mrs. Berry, Dr. C. M. Wilson of St. Mary's Hospital, Dr. Hamer, and Dr. Thackeray, Medical Superintendent of St. Pancras Infirmary. Of Professor Keith, the principal guest, Dr. Davis said that he had made the magnificent museum of the Royal College of Surgeons more useful than it had ever been before. Sir Arthur Keith, in responding, first expressed his thanks to the hospital and school for letting him participate in its family business, and his respect for the chairman, whose reputation as a surgeon and researcher was international. He then opened out on some of the medical and sociological aspects of sex differences.

A MONUMENT was inaugurated by M. Léon Bérard, Minister of Instruction, on December 4th, at the Faculty of Medicine of Bordeaux, to the memory of former students of the faculty killed in the great war.

WE are informed by the Chairman of the Board of Control that the medical superintendents and chairmen of Visiting Committees of all county and borough mental hospitals in England and Wales have been invited to a conference, to be held on January 19th at the Ministry of Health, to consider in what directions lunacy administration and the treatment of persons suffering from mental disease may be improved.

DR. JAMES STEPHEN, on the occasion of his retirement to Aberdeen from Peterhead, where he practised for nearly half a century, has been presented by his friends with two easy chairs and a piece of silver plate suitably inscribed.

THE first and second courses in psychological medicine at the Maudsley Hospital showed a surplus of receipts ever expenditure of £325, and it is expected that in the case of the third course, now in progress, expenditure and receipts will balance.

AT the recent meeting of the Ontario Neuro-Psychiatric Association at Mimico, Ontario, Dr. Edward Ryan, President of the Association, suggested that the time had arrived for a radical change in medico-legal procedure in cases where the accused was not of sound mind. He reviewed many leading cases, and asked why a medical commission of recognized psychiatrists could not be appointed in all medical cases to investigate the issue of insanity calmly and impartially, and lay the results before the attorney-general, the judge, and the jury. He suggested, therefore, that the legislature should provide that in all cases where the question of insanity was raised a body of psychiatrists should be appointed by the Crown—a permanent body if possible—to advise the Crown. The Hon. W. E. Raney, Provincial Attorney-General of Ontario, received Dr. Ryan's suggestion cordially. He said that if the association would appoint a committee to prepare legislation improving medico-legal jurisprudence he would supply legal advisers, and would undertake the expenses of such a committee. If legislation were prepared, he said that he would go on with it at the next session of the House.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediscera, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*: telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

"G. P." asks whether any particular article of diet or medicine is likely to benefit and arrest chronic interstitial nephritis. Alkalis and trinitrine have been used for headache, but it still persists.

INCOME TAX.

"BRIGHTON" asks if it is correct to include army pay in his practice.

*** Not if—as is in general the case—tax has been paid during the period of military service on the army pay for the year then current. If the pay in question was hospital pay issued through a local command and not dealt with by the paymaster for tax purposes or assessed separately by the local authorities, "Brighton" will probably be bound to include it in his average now.

"IKONA" inquires as to the allowance of expenses (1) in travelling to the headquarters of the Ministry of Pensions, and (2) of subscribing to professional societies, associations, and periodicals.

*** Where the fees in question are received by a general practitioner we conceive that he is entitled to include them in his general Schedule D statement, and to deduct the expense of travelling in the same way he would if he were attending at a patient's residence instead of at a Government office. But where the employment is a whole-time one the recipient of the salary would seem to be in the same position as any person living some distance from his work, and the expense of travelling cannot be deducted as a *professional* expense. In any case the expense of obtaining such periodicals and other sources of information as may be necessary to *maintain* the level of professional ability appears to us to be allowable. The expense of removing family and effects on taking up an appointment is not allowable.

LETTERS, NOTES, ETC.

A DISCLAIMER.

DR. G. N. BIGGS (London, W.) writes: It has just been brought to my notice that my name was mentioned in a Sunday paper last week in regard to the case of a boy who had been seen by Pastor Jeffreys at Notting Hill. I need hardly state that I was quite ignorant of the fact that my name was to be published, and I never gave any permission for it to be used in any way.

THE X-RAY TREATMENT OF CANCER.

DR. S. P. IMPEY of Capetown writes with reference to the recent announcement as to the intensive treatment of cancer and the apparatus used at Erlangen that he is not surprised that good results are obtained, but that he sees no reason why special apparatus should be used, as for many years past, with the "apparatus in general use," he is quite able to cure cancer with his own methods. "I have had under treatment," he writes, "about 1,000 cases, and out of this number have cured upwards of 80 per cent." Accompanying these claims, and to substantiate them, he refers to papers he has published in the *South African Medical Record* of November 22nd, 1913, p. 474, March 24th, 1917, p. 87, January 12th, 1918, p. 5, and February 12th, 1921, p. 41.

We have read these papers carefully. The first is entitled "The Roentgen-ray treatment of malignant growths," and after notes on the manner in which he suggests *x* rays act, he states: "I have treated 216 cases of malignancy and have cured 183." Analysing his cases, we found that of the rodent ulcers he claims 46 cured out of 49; of the epitheliomas, 124 cured out of 133; of cancer of the tongue, 2 cured out of 2; of cancer of the parotid, none cured out of 5; of cancer of the thyroid, none cured out of 5; of disease of the mammary growths (? all cancer), 4 cured out of 11; of sarcoma, none cured out of 1; or, excluding the epitheliomas, 6 cases of cancer, or suspected cancer, cured out of 24. No details of his methods are supplied. The second paper, on "*X* rays and cancer," contains little of value as regards his own work. It consists of a dissertation upon cancer and the action of *x* rays; a few statistics as regards his results on "cancer" of the lip, and a statement that "alcohol has a prohibitive action on the rays," and that his uncured cases were "topers." Details of methods are not given. The third paper, on "*X* rays and high tension electricity," is again a mere discussion upon the action of *x* rays. It contains no statement as to results and no details of methods. The last paper is on "Epithelioma of the lip and its treatment by *x* rays"; it again is a discussion on the cancer cell and the action of *x* rays, followed by a statement as to the author's views on the kinds of epithelioma; a statement that he has cured 200 cases of epithelioma of the lip out of 264 treated. No details as to methods are given. It follows, then, that the claim to have cured upwards of 80 per cent. of 1,000 cases of cancer treated is not substantiated in these papers. The results as published, putting the surface epitheliomata out of the question, boil down to twenty-four cases of cancer or suspected cancer (he admits he is not sure of all of them) and a claim of cure of six.

By a later mail we received another communication from Dr. Impey which, after references to the above-mentioned papers, concludes as follows:

"In the treatment of cancer by the *x* rays we must always bear in mind that:

"1. Idiocynerasies occur in *x*-ray work as often as in drugs administered, and these have to be guarded against.

"2. Alcohol seems to have an inhibitive action on the action of the rays, and when the system is saturated with alcohol the rays seem to have no beneficial action.

"3. Every cancer case differs from every other case in some detail, and these differences have to be taken in account when treating a case.

"4. The health of the patient has a considerable influence on the results; a healthy body responds more readily to the rays than an unhealthy one, a young patient than an old one. In this connexion I may mention that I have found the H.T. current very useful in stimulating the healthy tissues, for they undoubtedly act as a tonic to the system.

"5. The site of the cancer has a marked influence on the results of treatment. As regards site, all cancers may be divided for practical purposes into three classes. (i) Superficial: When the cancer is absolutely on the surface and is not covered by epidermis or cutis. (ii) The subcutaneous: When the unbroken skin covers the growth—in this may be included enlarged glands. (iii) Deep-seated growths: In superficial cancers there is no difficulty in effecting a cure with an ordinary *x* ray apparatus and with a soft tube. In the subcutaneous cases the results are not so good, because the skin acts as a filter and retards many of the most effective rays. In these cases a medium tube must be used, a stronger current of electricity, and the skin must be protected by a filter 1 mm. of aluminium or one thickness of good sole leather. In the deep-seated cases a much stronger current must be used, and the skin protected by at least 2 mm. aluminium or its equivalent in sole leather.

"6. To obtain the best results from a tube it should be brought as close to the tissue to be treated as possible.

"7. In my opinion medium doses given at short intervals, and extending over a lengthy period, give better results than any other methods."

The deep treatment practised at Erlangen and elsewhere is not concerned with epithelioma of the lip, etc., but with definite cancer, mostly of deep-seated organs, and Dr. Impey brings forward no evidence that is worthy of consideration bearing upon this point. On the evidence with which he has supplied us his initial claim is not proved; indeed, his figures prove the reverse. As to any special methods of *x*-ray treatment (referred to as "my methods") he does not describe them.

BIRTH CONTROL.

DR. MARIE C. STOPES (Holloway, N.) writes: Your two correspondents, Dr. Halliday Sutherland and Dr. Binnie Dunlop, by quoting paragraphs without their full context appear to lend support to views which by implication are, to some extent, detrimental to my own. This method of controversy has never appealed to me, but in the interests of the society with which I am associated, I must be allowed to answer the implications. The paragraph quoted by Dr. Sutherland is not, as would appear from his letter, a simple opinion of mine on the medical profession, but was written in reply to a rather scurrilous paragraph so worded as to lead the public to believe that the medical profession as a whole was against the Society for Constructive Birth Control and Racial Progress. My answer, which appeared not only in the papers quoted but in others, contained the following statement: "We have three of the most distinguished medical men in Great Britain on our list of Vice-Presidents; four others, also very distinguished, on our Research Committee." Reading these words before the paragraph your correspondent quotes, and taking all in conjunction with an attack implying that the entire medical profession was against us, it is obvious that the position is rather different from what readers of Dr. Sutherland's letter in your issue of November 26th might suppose.

As regards Dr. Dunlop, he now shifts the atheists' position by adding the word "organized." The atheists never tire of repeating certain definite misstatements, examples of which are: "If it were not for the fact that the despised Atheists, Charles Bradlaugh and Annie Besant, faced imprisonment, misrepresentation, insult, and ostracism for this cause forty-four years ago, she [Dr. Stopes] would not be able to conduct her campaign to-day" (*Literary Guide*, November, 1921); and "Before the Knowlton trial neither rich nor poor knew anything worth counting about contraceptive devices" (*Malthusian*, November 15th, 1921). Variations of these statements have been incessantly made, and I dealt with their contentions in the presidential address for the C.B.C. Meanwhile to them I reply that: "There has never been in this country any law against the dissemination of properly presented birth control information, and *before, during, and after* the Bradlaugh trial properly presented information on birth control was extending its range with full liberty." My address is now in the press and when published will make public not only new matter from manuscript letters of very early date in my possession, but other overlooked historical facts. I have already told Dr. Dunlop I refuse to be drawn into a discussion on facts, an account of which is still in the press.

MEDICAL SERVICES UNDER THE MIDWIVES ACTS.

"JUSTITIA" writes: I have recently had a friendly argument with the local sanitary authority of my town in connexion with payment for services rendered under the Midwives Acts, 1911 and 1918. The medical officer of health has always refused payment in those cases where the patient was not actually in labour, even though the attending practitioner has received the official "pink form" from the midwife concerned. Being convinced that my official colleague was wrong in his ruling, I decided to test the matter. The other day I received a "pink form" from a midwife asking me to see a case of pernicious vomiting of pregnancy. I at once complied, and afterwards applied to the M.O.H. for payment. This was courteously but definitely refused, on the grounds that "the patient was not in labour." I immediately took a barrister's opinion, and promptly summoned the mayor, alderman, etc., in the local county court. The legal advisers of the council decided that they had no case, and quickly paid into court the stipulated fee, *plus* the cost of the summons.

I have strong reason to think that other practitioners in other towns have also been refused payment on the same grounds, and would like to emphasize that it is clearly laid down in the "rules" drawn up under the 1918 Act that a medical man *must* be called in by the midwife if "any abnormality occurs during the course of *pregnancy*," and that the local sanitary authority is responsible for payment.

*** The action our correspondent took is to be commended, but he might have saved himself both expense and trouble if he had asked the Medical Secretary of the British Medical Association to take the matter up for him. One or two similar cases have already been taken up direct with the Ministry of Health with success.

THE MEDICAL SICKNESS ANNUITY AND LIFE ASSURANCE SOCIETY.

"M.B.CAMB., M.R.C.S." writes: In case any of your readers may be unaware of the existence of the Medical Sickness Annuity and Life Assurance Society and the benefits which may be derived from it, I should like to make known to them the following facts: I joined the Society in 1894. In 1900 my health broke down completely, and I could no longer continue to practise. The beneficiary payments of the Society began at once, and have now ceased because I have reached the age limit of 65; but between 1900 and the present time I have drawn 1,096 weeks' sickness benefit for the sum of £2,361, and have paid in premiums £227. My own experience may perhaps induce other members of the profession who are not already insured to consider whether it would not be worth while to follow my example.

TRAIN GOSSIP.

"M.B." writes: The general public sometimes blames us for our secrecy. I hope that such as the following incident is rare: Yesterday I was in a train for London. The occupants of the carriage were three men and three women, including a London specialist and myself. At a station about twenty miles from London two men got in, and for the remaining half hour to London "talked shop." One was a qualified man, apparently on holiday from another part of England, the second a medical student. They discussed mastoid operations, the tracing of a cerebellar abscess, and various cases of lateral thrombosis with their end results, good and bad. They then passed to the subject of the chief teachers and examiners in London, whom they discussed by name, the qualified man speaking of a well known surgeon, remarking, "He is always called 'the butcher' you know." They had no means of knowing that their enforced listeners included two doctors, who might have been friends of the surgeon, but the effect might have been great if the other members of the general public happened to have known him.

A PROBLEM IN RECONSTRUCTION.

THE printer's devil must have had a particularly virulent attack of perversity last week, for at page 208 of the SUPPLEMENT (col. 2, line 6) we are made to announce, as one of the items on the Agenda of a meeting of the Cambridge and Huntingdon Branch, "The Reconstruction of a Female," an achievement which no mere male (even a medical male) could be expected to undertake. What we should have announced, according to the "copy" sent in by the Secretary of the Branch was "The Reconstruction of a Femur." We can only hope that the announcement so whetted the curiosity of the members that a very full attendance resulted.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 29, 31, 32, 33, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 30 and 31.

THE appointment of medical referee under the Workmen's Compensation Act, 1906, for the Margate and Ramsgate County Courts in Circuit No. 49, is vacant. Applications to the Private Secretary, Home Office, by December 28th.

THE appointments of certifying factory surgeons at Chirk (Denbigh), Menai Bridge (Anglesey), and Chippenham (Wilts) are vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page)	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.